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ANNUAL REPORT

JULY 1, 1984 - JUNE 30, 1985

BOYD G. STEPHENS, M.D.
CHIEF MEDICAL EXAMINER
850 BRYANT STREET
SAN FRANCISCO, CALIF. 94103

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CHIEF MEDICAL EXAMINER - CORONER
SAN FRANCISCO, CALIFORNIA

ANNUAL REPORT

JULY 1, 1984 - JUNE 30, 1985



BOYD G. STEPHENS, M.D.
CHIEF MEDICAL EXAMINER

JOSEPH E. SURDYKA
ADMINISTRATIVE CORONER

850 BRYANT STREET
SAN FRANCISCO, CALIF. 94103

September 1985

Honorable Dianne Feinstein, Mayor
Honorable Board of Supervisors
City and County of San Francisco
City Hall
San Francisco, California 94102

Dear Mayor Feinstein and Honorable Supervisors:

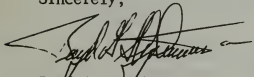
Over the past year, this office has continued to improve its capabilities and expand its abilities in forensic medicine. The total number of homicides for the county has stabilized, and increased for this department, while the nature and extent of those homicides and special cases within the county have actually resulted in an increased work-load for the office. There is an increasing awareness of and requirement for improved forensic work by the judicial system, the District Attorney and the Public Defender. In addition, the courts are requiring increasing amounts of forensic evidence in major and minor cases. With up to 40% of the cases heard by the court of appeals being upheld and sent back for retrial, as well as the importance of being absolutely correct in the findings, the time and costs of investigation must continue to increase.

Service for other law enforcement agencies continues to increase, and is expected to increase slowly for some time into the future. This is, however, an additional work-load for the department which frequently has to be interfaced with our regular work load.

Almost all of the objectives for the department have been met or exceeded. The principal objective for the last year was to totally convert the public records of the department to computer format and to evaluate the department's needs for a scanning electron microscope. Purchase of the necessary computer stations to enable the document conversion and retrieval of records has been delayed because of a county freeze on equipment purchase. The search for an scanning electron microscope is still continuing. We are currently using another agencies instrument for some of our work, but this access is obviously limited.

Our continuing policy is to maintain one of the best medical examiner's facilities in the United States, so that non-biased scientific medico-legal investigation is insured for the citizens of this county.

Sincerely,



Boyd G. Stephens, M.D.
Chief Medical Examiner

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INTRODUCTION

The Medical Examiner-Coroner is appointed by law to many responsibilities, the foremost of which is the investigation and certification of a variety of deaths including all deaths of other than natural causation, and any apparently natural deaths in which no physician can reasonably state the cause. The Medical Examiner can utilize any and all medico-legal investigative techniques, including autopsy, to establish both the medical cause of death, and mode or circumstances of death (natural, accident, homicide, suicide or undetermined).

The deaths which must be reported to the Medical Examiner-Coroner, as required by various sections of the Government, Health and Safety and Penal codes are as follows:

1. Homicide - known or suspected
2. Suicide - known or suspected
3. Following accident or injury (whether the accident or injury is the primary cause or contributory; death occurring immediately or at some remote time)
4. Medical attendance of less than 20 Days
5. No physician in attendance
6. Physician unable to state the cause of death (must be unable, not merely unwilling)
7. Poisoning (food, chemical, drug, therapeutic agents)
8. Occupational or industrial deaths
9. All deaths where a patient has not fully recovered from an anesthetic, whether in surgery, recovery room, or elsewhere
10. All deaths in operating rooms
11. All solitary deaths (unattended by physicians or other person in the period immediately preceding death)
12. All deaths in which the patient is comatose throughout the period of the physician's attendance
13. All deaths of unidentified persons
14. Grounds to suspect that the death occurred in any degree from a criminal act
15. Contagious disease - known or suspected - and constituting a public health hazard
16. Deaths in prison or while under sentence
17. In the continued absence of a physician (not having seen the patient in 20 days prior to death)
18. Associated with a rape - known or alleged - or crime against nature
19. Related to or following abortion - known or suspected
20. Involving drowning, fire, hanging, gunshot, stabbing, cutting, starvation, exposure, alcoholism, drug addiction, strangulation or aspiration

Additional mandated responsibilities include protection and safekeeping of property belonging to deceased individuals; conducting inquests when indicated; maintaining proper public records; making reports to other agencies; identification of deceased persons; internment of indigent dead; and many other death-related activities.

STATEMENT OF CURRENT MANAGEMENT AND SCIENTIFIC POSITION

Fortunately, the physical facilities of the San Francisco Medical Examiner's office are well designed and are suitable for the forensic medicine work routinely performed in this county. Some facility improvements are planned for this year to improve the safety features of the building, features that were unknown or not required at the time of the initial construction in the 1960's. Additionally, because of the increasing work load, the toxicology department is being expanded to allow for the new instrumentation necessary for analysis of the types of drugs used today. Many of these new and dangerous drugs which are available in the community, can only be detected by sophisticated equipment since the biologic levels are so very low. There is still some shortage in personnel, although reduced from the previous year. This problem is currently being addressed with the help of the civil service examination program, and should be largely resolved in the near future. Many of the problems of administration for the department pertain to the record and data handling procedures which are quite out of date. Changes are underway to computerize many of the routine investigative reports, as well as most of the operating records of the department. If the department can be completely computerized, much of the unnecessary paperwork can be eliminated, thereby streamlining the functions of the office and bringing productivity more in line with other county offices. These proposed changes allow us to more properly address our primary function-the practice of forensic medicine, and spend less time on the mechanics of paper generation.

I ADMINISTRATIVE

Staffing in this section has recently been brought to the required level. There is a need to restructure the office so that job descriptions, work-loads and salaries properly meet the actual work requirements and needs of the facility. Training is now completed for basic computer utilization, and the office is being changed to computerization of records without major difficulties. All investigational records are being converted to computer format, which will aid in record keeping and distribution, and reduce bookbinding costs. This will allow direct exchange of records with other agencies that have need for our information, as well as improving the productivity of the office.

II INVESTIGATIVE

One new deputy position has been authorized and has been staffed. A primary job assignment for this person will be follow-up investigations. This will reduce the work load on the forensic pathologists, allowing them to do other work, and improve the accuracy of the work we produce. Currently, many times there simply isn't enough time to do the degree of investigation required to insure that all the appropriate information is available prior to court testimony.

Our total case load appears to be staying about the same as far as numbers, with the deputies investigating approximately 4000 cases annually. Legislation just passed is likely to make the deputies work significantly more dif-

ficult by requiring evaluation for tissue donation and investigation for religious statement of non-autopsy preference as part of their investigation procedure. The religious bill will require that this office take on some degree of legal advocacy position, since it will require a public court hearing in superior court anytime that we believe an autopsy is required to determine the cause and manner of death, but where the patient has signed a statement of religious preference opposing the autopsy. This will require close and frequent cooperation between the city attorney and the superior courts. Because it takes a routine medical decision and makes it an open court advocacy procedure, we expect that there will be considerable negative press representation, and a high probability of legal action against the county. Under this law, if a person drives his car at high speed onto a sidewalk, injuring several people and causing his own death, but has a signed religious preference document, the coroner or medical examiner would be prohibited from taking samples or performing an autopsy except by court order. Anytime that death was sudden and unexpected, but not obvious homicide or contagious, and an autopsy was needed to determine the cause and manner of death, a court hearing would be required if the religious document was indicated by a relative or friend. It is difficult to predict the actual extent of this law or the actual costs to the county at this time. One religious group has indicated that they will be starting an extensive campaign to encourage people of all religions to sign these documents.

Almost all the deputies have completed the P.C. 832 basic course, and several have completed the basic blood spatter course. Most have received additional formal training on evidence and forensic medicine over the year. The two new deputies will complete the P.C.832 course this year. The next major education goal for the deputies will be in report writing. Additionally, because the investigational needs of the department are changing, we have changed the requirements for the deputies deleting the requirement for a mortuary background, upgrading the educational and writing capabilities to move the job description more in line with the job requirements.

Improvements in the equipment and facilities for the deputies has continued during the year, and will continue into the next year. There is an increasing requirement for the deputies to go to court. With the turn over in deputy district attorneys and public defenders, plus the changes in the appellate courts, strict requirements for evidence presentation becomes more and more common. This appears to be largely due to proposition 8 requirements, as well as the changes in the policy of the court of appeals. As such, a budget item for court funding for the deputies may become necessary in the next budget.

III TOXICOLOGY

More than any other department in this office, toxicology has shown the most growth and need to expand. Current in this year's budget is a major expansion and refurbishing of the laboratory to both expand its capabilities and to simultaneously improve the safety and protection of personnel and equipment in the laboratory. To protect the very expensive electronic equipment, a Halon fire extinguisher system, which is computer compatible, is being installed. A rear safety exit and other safety changes will bring the section up to current fire and safety code compliance for both OSHA and fire codes.

A continuing problem is the never ending stream of new street drugs and the increasing numbers of drugs, both legitimate and illegal, that have physiologic levels so low that very special equipment is necessary for their detection. One good example is Fentanyl and its chemical analogs. This drug is being reported many times in counties around San Francisco, but so far we have not detected it here. This is partly because we cannot detect this drug in the body with the equipment we have, because the levels are so low. More and more, this is true of the pharmaceuticals prescribed by physicians. It is also true for some of the older illegal preparations seen on the street. Examples are LSD and some of the drug metabolites. A gas chromatograph/mass spectrograph has been approved and ordered. It should be on line by the second quarter of the 1985-86 budget. This equipment will be extremely beneficial to this department as well as aiding work from the crime laboratory and the SFGH toxicology laboratory. Additionally, toxicology has been doing all the testing for the police recruit program.

IV AUTOPSY FACILITIES

There has been a significant increase in the autopsy of contagious or suspicious infectious cases over the past year. This is partly due to the AIDS epidemic present in the community. We need to continue to improve our capabilities to work with contagious diseases. Improved equipment and instrumentation is planned for this department, and is being included in the budget request. Improved photographic documentation capability of evidence was achieved in the past budget.

V INQUEST DIVISION

We have not experienced the anticipated problems with SB 1824 (Religious Bill) since its enactment in January 1985. We continue to rely on the traditional inquest. This division is adequately staffed for the current level.

VI FORENSIC PATHOLOGY DIVISION

The teaching program continues to advance under the direction of Dr. J. J. Ferrer. It has received wide acclaim, and was recently given budget support. The fellowship program, approved by the AMA for two positions, had the second position funded in the current budget.

VII CONSULTATION SERVICE

Expert consultation in the field of forensic medicine continues to increase in numbers and scope. Currently, we do the laboratory testing and much of the

court presentation in sexual assault cases that are examined at SFGH. We frequently examine children and adults for evidence of injury or non-injury in issues of assault in cases of child abuse, wife abuse and police assaults. We are part of an active child abuse prevention program through a committee designed to detect abuse or family stress in cases of death, and potentially prevent similar instances in siblings in the same family. We are also active in suicide prevention programs, with one staff member serving on the board of directors.

We are active in drunk driving programs, including detection, analysis, evaluation and court presentation of evidence. This is partially within the Mayor's Drunk Driving Program, and partly through other programs. We routinely perform analysis of biologic samples for the district attorney, public defender or highway patrol, and testify in court on the medical or toxicologic aspects of the case.

Our Forensic Anthropologist, Dr. Roger Hagler and our Forensic Odontologist, Dr. Oliver Harris have expended literally hundreds of hours of work with the Calaveras County Case, with many more hours needed to complete their painstaking work.

Forensic medicine serves many useful purposes in a community. It is our goal to have a worthwhile and widely beneficial program in this county for both the living and the dead.

ONE YEAR PLAN - 1986

This plan is based on the completion of the following stages during 1985-86.

1. Completion of the toxicology expansion with new laboratory space.
2. Procurement of equipment and instrumentation authorized in the current budget.
3. Staffing of a laboratory manager/research manager position. This position is necessary for the continued growth and development of the toxicology laboratory.
4. Review, site and procure scanning electron microscope.

Since one of the major goals is the upgrading of instrumentation and capabilities of the department, there must be a major financial commitment by the county to this end. Otherwise, the piecemeal procurement of instrumentation will never bring the equipment up to the necessary level to satisfactorily answer the questions of drug or other poison involvement in death, arrests or suspicious event (see the previous annual report for the description of the nature, type and scope of the many sources of samples for analysis by this department).

Equipment required by the department

- Graphite Furnace or Flameless Atomic Absorption Spectrophotometer
- HPLC Chromatography
- Radio or Immunofluorescence Immunoassay Capability
- Auto-injection equipment for existing and new equipment
- Replacement of electron capture detector
- Replacement and updating current GC equipment
- Computer interface for existing and new equipment
- Computer modem for library interface
- Additional evidence storage and walk-in refrigeration

These are expensive instruments, but vital to the work of the department and our interface with other departments.

THREE YEAR PLAN

This plan is predicated on the procurement of adequate equipment, instrumentation and staff to perform excellent quality forensic medicine and to have the capability to expand as necessary to meet the changing requirements of court and the legal system.

- Staffing of permanent full-time laboratory manager
- An active fee-for-service program for other law enforcement agencies
- Increased forensic research (see previous annual report)
- Modem and library capability
- All records in computer format
- Gradual replacement of office furniture
- Continued capital improvements of the facilities

FIVE YEAR PLAN

The primary plan for the next five years is to continue to improve the training for investigators and the forensic staff. To do this, we must provide the equipment and didactic training necessary for quality forensic medicine.

Continue procurement and upgrading of equipment and instruments

Continue training programs

Continue administrative and facility improvements

On line computer assistance with analysis and case investigations

Improve inquest system, including inclusion of a law judge as the presiding hearing officer

Bring one or more national forensic conventions to San Francisco

Continue law enforcement and medical education programs with the potential for becoming a recognized education or training center in forensic medicine

Continue work in sexual assault, child abuse and other assault cases to reduce occurrences

DEPARTMENTAL

ADMINISTRATION

DEPARTMENTAL ADMINISTRATION

MBO - PERFORMANCE MEASURES AND GOAL ACHIEVEMENTS DURING 1984-85

04B Objective measure - to maintain out-of-county consultations by the Chief Medical Examiner to provide revenue to the office.

During the fiscal year of 1984-85, there were 121 out-of-county consultations. The number of out-of-county consultations provided by this office is dependant upon requests from out-of-county agencies. These requests in turn, are determined by the needs of the out-of-county agencies relative to difficult and complex cases. Other than informing other agencies of the capabilities of this office and the availability of consultant services, this office cannot control the number of consultation requests made. The revenue to the office was maintained.

04C Objective measure - to establish and maintain quarterly records of time spent by the Chief Medical Examiner and his assistants on in-county court cases.

This objective was attained. Quarterly records of time spent by the Chief Medical Examiner on in-county court cases during the fiscal year of 1984-85 show that the Chief Medical Examiner and his assistants appeared in court 69 times and spent a total of 376 hours in consultations, preparation, and court appearances.

04D Objective measure - to effect identification of at least 90% of unidentified cases within 30 days.

This goal was reached. Of a total of 145 unidentified cases, 97% were identified within 30 days.

04E Objective measure - to increase the expertise of field investigators by implementing 20 hours of training per investigator.

DEPARTMENTAL ADMINISTRATION (Continued)

During the 1984-85 fiscal year the ten investigators received 287 hours of training, attaining our objective of 20 hours per investigator. Training for investigators for Fiscal year 1985-86 should be maintained as funds have been budgeted.

04F Objective measure - to transcribe all traumatic gross autopsy reports within 24 hours of completion of the autopsies.

This objective was attained. Gross autopsy reports from all the traumatic death cases received by this office were all transcribed within 24 hours of the autopsy.

04G Objective measure - to transcribe all non-traumatic gross autopsy reports within 5 days of completion of the autopsies.

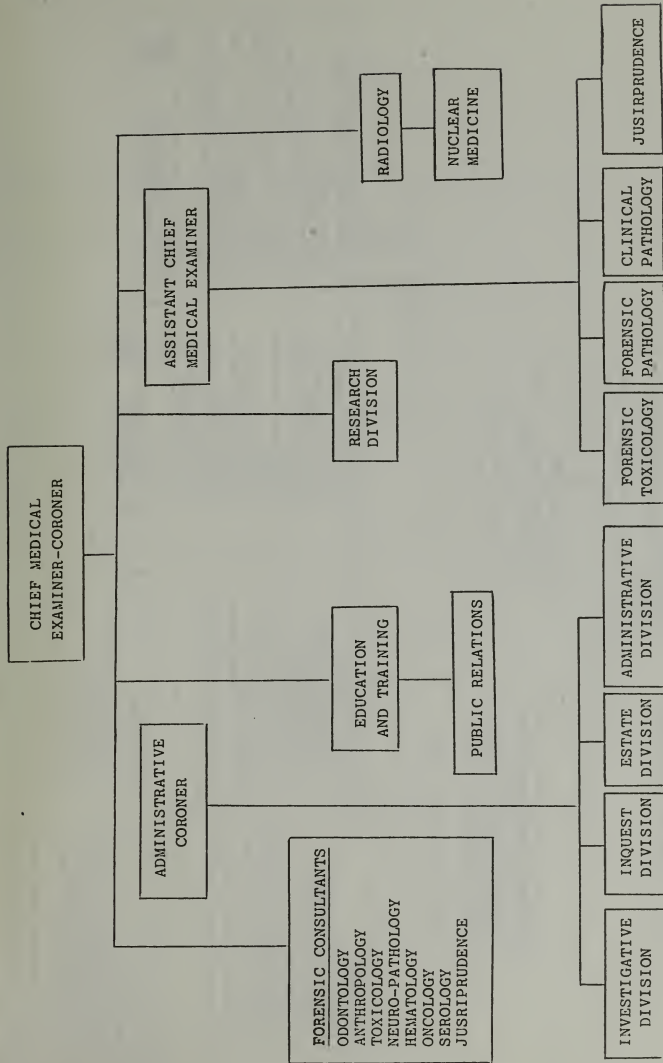
This objective was nearly attained, 90% of the gross autopsy reports from cases of non-traumatic death were transcribed within 5 days of completion of the autopsies. During this fiscal year, the transcription of a large back-log of cases was completed and transcription is current to the month.

DEPARTMENTAL COSTS

1984 - 85

Total Budget	\$1,583,233.00
Transfers to the Controller, Health and Retirement	238,582.00
NET BUDGET (all other costs)	1,344,651.00
Total cases	4214
Cost per cases investigated	\$ 319.00
Revenues (sales of records, public auctions, fee-for-service work)	\$ 51249.00
Total Costs <u>Ad Valorum</u> Taxes Per Case Investigated	\$ 307.00

As indicated elsewhere, this includes all investigative, administrative, scientific and expert witness costs to the county.



City & County of San Francisco
 Chief Medical Examiner/Coroner's
 Function and Organization Chart
 Date: June 1985

CHIEF MEDICAL EXAMINER-CORONER'S OFFICE

- Directs operation of the department
- Investigates and medically evaluates all deaths where causes are undetermined
- Establishes procedure and work standards
- Directs and evaluates effectiveness of professionals
- Presides at inquests and examines witnesses
- Testifies in court as expert witness

(1) CHIEF MEDICAL EXAMINER/CORONER (2584)

STENOGRAPHIC SECRETARY

- Performs highly specialized stenographic/secretarial duties
- Serves as confidential secretary

(1) Stenographic secretary (1452)

ADMINISTRATIVE & INVESTIGATIVE DIVISION

- Assists in directing the administrative and legal activities and functions
- Maintains records and files in absence
- Develops and enforces departmental policies

(1) Administrative Coroner (2581)

ESTATE SECTION

- Receives, accounts for and distributes property
- Assists in inventory
- Assists and reviews work of clerical unit
- Assists with preparation of budget
- Assists with preparation of payment for operation of office
- Handles confidential files & mail

(1) MANAGEMENT ASSISTANT (1842)

INVESTIGATIVE SECTION

- Investigates circumstances of death under jurisdiction of Medical Examiner
- Examines and tags bodies, evidence and exhibits
- Notifies next of kin or legal representatives
- Prepares detailed reports
- Prepares ambulance
- Prepares fingerprints
- Fingerprints deceased persons

(11) CORONER'S INVESTIGATORS (2580)

CLERICAL SECTION

- Transcribes medical reports from dictation equipment
- Operates word processing equipment
- Types and distributes files all correspondence related to cases
- Assists public relative to deaths in office and telephones

(4) MEDICAL TRANSCRIBER TYPISTS (1440)

(1) MEDICAL CLERK STENOGRAPHER (1461)

INQUEST SECTION

- Records testimony at all inquests
- Arranges for transcription of inquest testimony
- Records depositions

(1) COURT REPORTER (P. T.) (8138)

FORENSIC TYPOLOGY & SKELETON SECTION

- Conducts chemical examination of body tissues & fluids in Coroner's cases
- Examines forensic significant cases
- Records & prepares case histories & reports
- Maintains equipment, ensures proper maintenance of equipment
- Prepares compliance procedures with state licensing with state licensing
- Consults with courts, police, District Attorney, Public Defender, Coroner, Physicians & other significant agencies
- Provides expert testimony in court

(1) "TYPOLOGIST"
 (2) ASSISTANT "TYPOLOGIST" (2456)
 (3) STENOGRAPHER (2492)
 (1) STAFF ASSISTANT (2440)

CLINICAL & FORENSIC PATHOLOGY SECTION

- Performs autopsies
- Performs medical findings and prepares related reports
- Confers with courts, police and district attorney
- Performs routine clinical laboratory tests relating to pathogenic microbes or other specimens
- Performs specialized identification work on badly decomposed bodies
- Maintains laboratory and autopsy rooms
- Conducts Forensic Medical Seminars and lectures

(2) SENIOR PHYSICIAN SPECIALISTS (2232)
 (2) POST M.D. VI
 (2) CLINICAL LABORATORY TECH. (2284)
 (3) FORENSIC AUTOPSY TECH. (2523)

FORENSIC

INQUIRY

FORENSIC INQUIRY

MBO - PERFORMANCE MEASURES AND GOAL ACHIEVEMENTS DURING 1984-85

06A Objective measure - to increase by 10% over last year the toxicological examinations of out-of-county referrals in order to increase revenues to the office.

The target for this fiscal year was 15 cases. This target was exceeded - the actual number of cases referred from outside of the county for toxicological testing was 33.

06B Objective measure - to decrease turnaround time by 10% for Coroner's toxicological tests over last year in order to decrease the waiting period for completion of death certificates and other legal documents.

A total of 1,804 Coroner's cases were submitted for toxicological testing. The goal of testing 98% of these cases was reached during each quarter of the fiscal year. The turnaround time (the average number of days required for toxicology tests to be completed) decreased to 3.6 days in the first and second quarter, to 4 days in the third quarter and 4.3 days in the fourth quarter. The turnaround time was under the goal of 5 days. The number of outstanding cases at the end of each quarter decreased with none remaining at the end of the fiscal year. The improved performance demonstrate the addition of 2 full-time positions and a subsequent concerted effort to maximize the overall performance of the toxicology laboratory.

06D Objective measure - to increase to 18.5% the number of Coroner's cases which are tested for common abuse drugs.

The number of Coroner's cases tested for common abuse drugs during the 1984-85 fiscal year doubled the total for 1983-84 far exceeding our goal.

FORENSIC INQUIRY (Continued)

06E

Objective measure - to decrease turnaround time by 50% over last year for toxicological testing of persons accused of, or victims of major felonies.

Specimens from persons accused of, or from victims of major felonies were recieved on a total of 184 cases. The average number of cases in which testing was not completed by the end of the quarter was 2. The average number of days required to complete testing on these cases was 7.5 calendar days.

06F

Objective measure - to complete autopsies on all non-traumatic deaths within 24 hours.

All autopsies on the 1,155 non-traumatic deaths which were received were completed within 24 hours, meeting the target.

06G

Objective measure - to complete autopsies on traumatic deaths within 24 hours.

All (100%) of the autopsies on the 560 traumatic death cases received were completed within 24 hours, meeting the target for this objective.

06H

Objective measure - to establish and maintain quarterly records of time spent by the Forensic Toxicologist on in-county court cases.

Records of the amount of time the Forensic Toxicologist spent on in-county court proceedings were established and maintained during this fiscal year. These records show that the Forensic Toxicologist made 25 court appearances, spending 69 hours in court and 143 hours in consultations. Subpoenas received during fiscal year 187.

FISCAL YEAR 1984-85

Total Deaths in County	8,370
Total Deaths Reported to Coroner	4,214
Cases Reported, Investigated and Cleared by the Coroner or physician's signature	2,427
Coroner's Cases	1,787

% Reported to Coroner	50.3
% County Deaths Having Coroner's Jurisdiction	20.2

Cases Accepted by Coroner

1. Natural Deaths	1,193	(67.5%)
2. Accidents	274	(15.0%)
3. Suicides	153	(8.5%)
4. Homicides	95	(5.0%)
5. Mode Equivocal	35	(2.0%)
6. Cause Unknown	20	(1.0%)
7. Sudden Infant Death Syndrome	17	(1.0%)
8. Private Autopsies	38*	

* Not included in above figures.

Autopsies performed	1,615
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Autopsy Index	90.0%
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Burials Authorized by Coroner

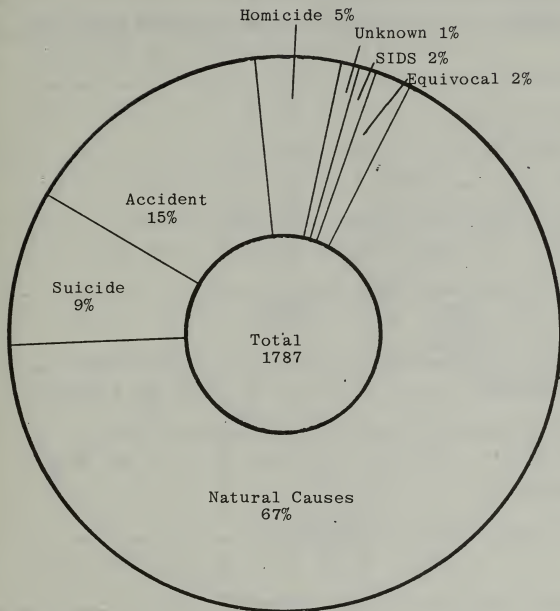
1. Indigents and fetuses buried by City	161
2. Cases buried by funeral home with Public Administrator-controlled funds	36

Inquests Held or Depositions Taken	30
------------------------------------	----

Identification

1. Persons brought to Coroner's Office with insufficient identification	145
2. Persons subsequently identified by fingerprints, dental X-rays or other means	141
3. Persons buried as unidentified	4
4. Fingerprints taken and forwarded to FBI, CII, or SFPD	1,697

MEDICAL EXAMINER CASES FOR 1984-85



MEDICAL EXAMINER CASES

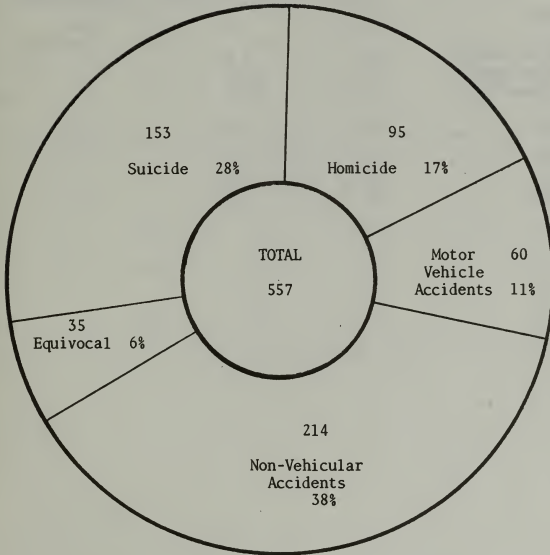
1984-1985

Monthly Comparison

MANNER OF DEATH	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
Natural	104	113	76	92	101	119	134	93	98	89	78	96	1193
Unknown	2	2	1	2	1	3	1	4	1	1	1	1	20
Equivocal	3	2	8	3	1	0	0	1	5	7	1	4	35
Suicide	14	11	18	9	11	20	11	8	10	11	15	15	153
Homicide	4	9	10	8	4	11	8	8	7	7	12	7	95
Industrial Accident	1	0	0	0	1	0	1	0	0	1	2	0	6
Accident - Other	14	13	16	15	17	10	22	21	21	18	20	21	208
Motor Vehicle Acc.	6	4	4	7	7	3	5	6	1	7	3	7	60
*SIDS	0	1	1	3	1	1	1	0	2	3	2	2	17
PRIVATE AUTOPSIES (Not in above total.)	1	4	4	3	6	0	1	6	4	3	3	3	38
TOTALS	148	155	134	139	144	167	183	141	145	144	134	153	1787

*SIDS - Sudden Infant Death Syndrome

VIOLENT DEATHS



Violent deaths are those caused by any non-natural means, including drugs. In San Francisco, 557 violent deaths occurred during the fiscal year 1984-85, accounting for 32% of the Medical Examiner death investigations.

VIOLENT DEATHS

Of the 1,787 deaths investigated by the Coroner's Office during 1984-85, 557 were determined to be the result of violence.

<u>Mode</u>	<u>Total No.</u>	<u>% of Coroner's Cases</u>	<u>% of County Deaths</u>
ACCIDENT	274	15	3.1
Motor vehicle	60	3.3	
Non-vehicular	208	11.6	
Industrial	6	0.3	
SUICIDE	153	8.5	1.8
HOMICIDE	95	5.0	1.0
EQUIVOCAL	35	2.0	0.5

VIOLENT DEATHS

Racial Distribution

<u>RACE</u>	<u>Accident</u>	<u>Suicide</u>	<u>Homicide</u>	<u>Mode Equivocal</u>	<u>TOTAL</u>
Caucasian	206	127	54	31	418
Black	45	11	30	1	87
Asian and Other	23	15	11	3	52
TOTALS	274	153	95	35	557

Distribution by Sex

Male	185	112	74	24	395
Female	89	41	21	11	162
TOTALS	274	153	95	35	557

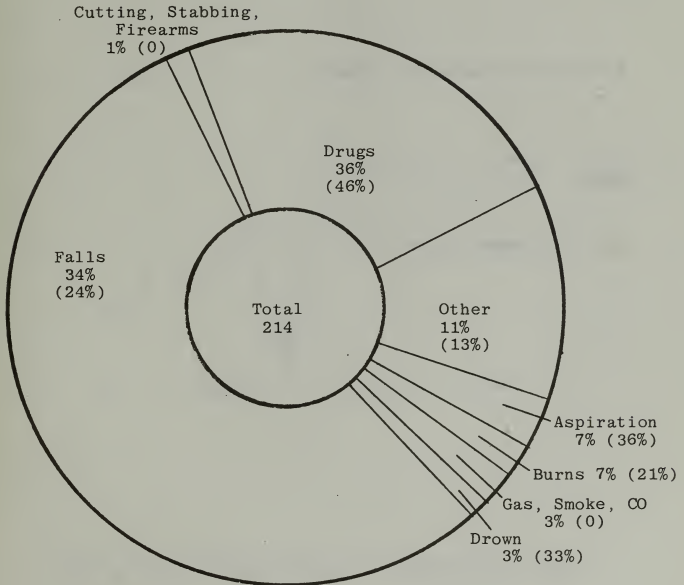
VIOLENT DEATHS

MODE OF DEATH--YEARLY COMPARISON

<u>YEAR</u>	<u>Motor Vehicle</u>	<u>Non-Vehicular</u>	<u>SUICIDES</u>	<u>HOMICIDES</u>	<u>TOTALS</u>
72-73	122	319	227	94	884
73-74	82	256	220	137	695
74-75	89	349	224	126	788
75-76	105	363	195	151	814
76-77	75	226	233	149	683
77-78	81	271	194	145	691
78-79	94	246	233	103	676
79-80	94	199	208	114	615
80-81	106	191	179	136	612
81-82	74	240	183	132	629
82-83	74	245	173	104	596
83-84	51	230	182	84	547
84-85	60	214	153	95	522

NON-VEHICULAR ACCIDENTS

This category includes all unintentional fatalities except for traffic deaths. There were 214 accidental deaths which accounted for 12% of the Medical Examiner death investigations for the fiscal year of 1984-85.



The percent in brackets indicates the percentage of victims in the category with a positive blood ethyl alcohol concentration.

INDUSTRIAL ACCIDENTS

1984-1985

Total Number of Industrial Accidents 6

MEANS

Traumatic Injury 6

SEX

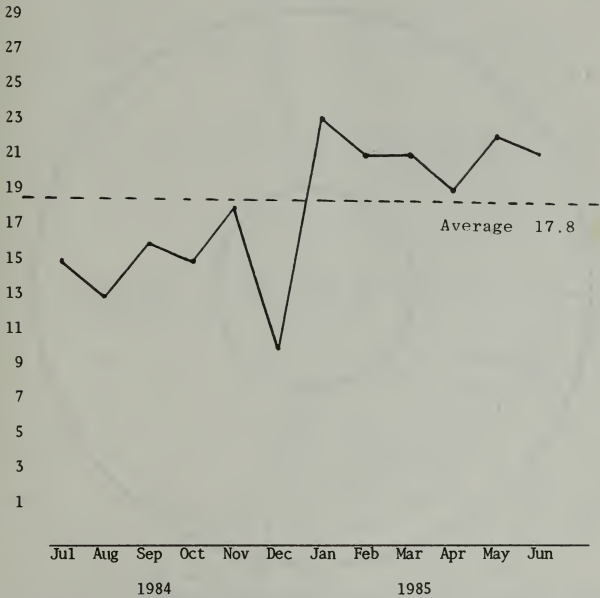
Male 6

Female 0

ACCIDENTS

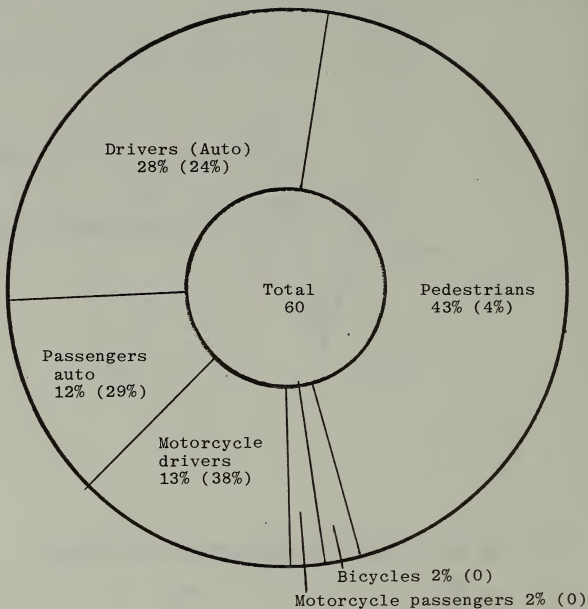
(Including Industrial)

Comparison by Month



TRAFFIC

In San Francisco, there were 60 traffic-related fatalities, accounting for 3% of the Medical Examiner death investigations for the fiscal year 1984-85.



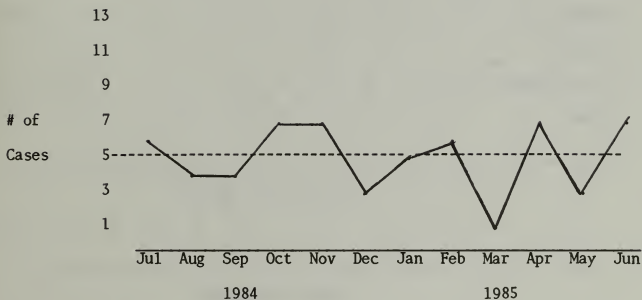
The figure in brackets indicates the percentage with positive blood ethyl alcohol.

TRAFFIC (VEHICULAR) DEATHS

Comparison by Age

<u>Age Group</u>	<u>Number</u>
0 - 19	7
20 - 29	18
30 - 39	7
40 - 49	6
50 - 59	4
60 - 69	7
70 - 99	11

Comparison by Month



ACCIDENTAL DEATHS

	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>Tot.</u>
TOTAL MONTH	15	13	16	15	18	10	23	21	21	19	22	21	214

Male	13	1	13	13	14	5	13	12	16	14	15	18	147
Female	2	12	3	2	4	5	10	9	5	5	7	3	67

MANNER OF DEATH

Drugs	8	7	4	7	5	3	6	4	10	8	7	9	78
Aspiration/ food bolus	0	0	2	0	2	0	0	5	2	1	1	1	14
Drowning	1	1	0	0	1	1	0	1	0	0	0	1	6
Asphyxia	0	0	0	0	2	0	0	0	0	0	0	0	2
Firearms	0	0	0	1	0	0	0	0	0	0	0	0	1
Gas/Smoke/CO Inhalation	0	0	0	1	0	1	0	0	0	0	0	1	3
Burns	1	0	3	1	1	0	2	1	2	2	0	1	14
Falls	4	3	6	5	5	5	11	6	6	7	9	7	74
Toxic Poison	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	1	2	1	1	1	1	3	4	1	1	5	1	22

MOTOR VEHICLE DEATHS

6	4	4	7	7	3	5	6	1	7	3	7	60
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RACIAL COMPARISONS

Caucasian	11	10	14	13	15	10	18	15	14	13	13	16	162
Black	3	3	1	1	3	0	3	6	6	4	7	3	40
Asian and Other	1	0	1	1	0	0	2	0	1	2	2	2	12

SUICIDE

The determination of suicide as a manner of death represents the summation of scene investigation, including a review of psychological state, autopsy, pathology, toxicology and, frequently, other investigation. To the best of our knowledge, this is the only Coroner's Office performing toxicology on multiple organs and/or body fluids routinely in order to evaluate the metabolic status of a drug or drugs.

Realizing the immense emotional impact on family, the diagnosis of suicide is never made lightly, and always represents a decision made on the basis of data sufficient to defend that decision in a court of law, if necessary. Should these data be inconclusive, the victim automatically gets the benefit of the doubt.

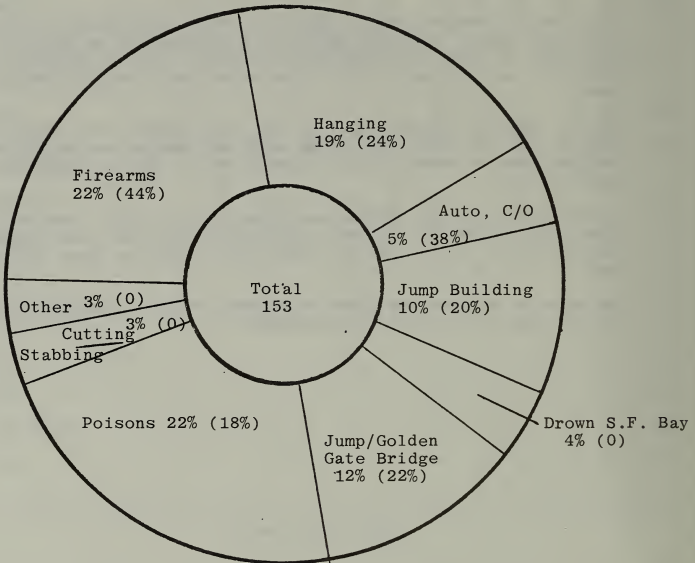
Suicide takes a tremendous toll of our young people. The relative number jumping from the Golden Gate bridge would not seem to warrant the publicity assigned them as compared to the evident need for help for individuals using other methods.

To help understand the problem, and, hopefully, to aid in reduction of suicides, this office has supported suicidology research and prevention programs for many years. It is hoped that this work will help to reduce this needless loss.

The majority of these deaths are situational reactions, and, given momentary trained support, are potentially preventable.

SUICIDES

Suicides are self-inflicted deaths. In San Francisco, 153 suicides occurred, accounting for 9% of the Medical Examiner death investigations for the fiscal year of 1984-85.



The percent in brackets indicates the percentage of victims in the category with a positive blood ethyl alcohol concentration.

SUICIDES

TOTAL NUMBER 1984-85 153

<u>METHOD</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>
Poisoning	50	46	38	34
Jump/G.G. Bridge	18	22	19	18
Jump/Bay Bridge	1	1	2	0
Jump/Building	20	16	23	15
Auto/CO	4	7	4	8
Plastic bag	2	2	1	1
Hanging	27	26	28	29
Cutting/stabbing	8	7	10	4
Firearms	48	36	48	34
Drowning	2	9	1	0
Burning	1	6	2	0
Other	2	1	2	10

SEX

Male	123	123	138	112
Female	60	50	44	41

RACE

Caucasian	155	145	143	127
Black	7	12	22	11
Asian and Other	21	16	17	15

SUICIDES

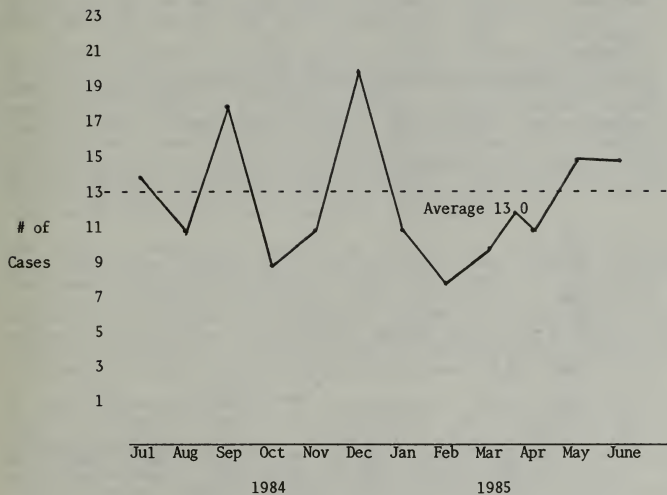
Comparison by Age

Number per Year

<u>Age Range</u>	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>
0 - 19	11	7	9	4	7
20 - 29	41	56	37	34	27
30 - 39	41	48	48	44	37
40 - 49	32	26	20	21	25
50 - 59	22	13	20	26	20
60 - 69	13	17	17	20	16
70 - 79	11	12	18	18	15
80 - 89	7	3	9	12	4
90 - 99	1	1	2	3	2

SUICIDES

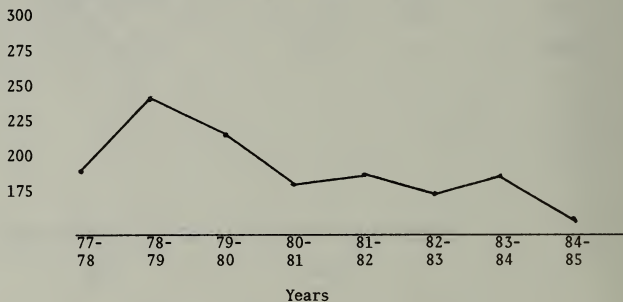
Comparison by Month



SUICIDES

COMPARISON BY YEARS

METHOD	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
Poisoning	65	83	52	55	50	46	38	34
Hand Gun	35	40	40	31	36	36	48	34
Golden Gate Bridge	18	19	21	21	18	22	19	18
Total Suicides by Year	194	233	208	179	183	173	182	153



HOMICIDE

Homicide is the killing of one human by another. Murder is the unlawful killing of a human being with malice. The following data do not differentiate homicide as to whether it is justifiable, accidental or murder. Such distinctions are the proper function of the judicial system and are not the responsibility or function of this office.

Any judicial system dealing with crimes involving death requires a well-trained staff and well-equipped Medical Examiner-Coroner's Office that can and will interpret the forensic findings in an unbiased, fair manner. This investigation must be intense, accurate and rapid enough so that the charges against one or more individuals may be pursued or dismissed without unfairly affecting their constitutional rights. This is the purpose of this office.

The proper evaluation and investigation of a homicide begins, naturally, at the scene. In the majority of cases, a member of this office (either the Coroner's investigator, Administrative Coroner, or Medical Examiner), determines whether a death is a potential homicide. It has been well-documented that, if such a determination is made by an individual inexperienced or untrained in death investigation, his opinion will be wrong in 50% of the cases. Such a person is very apt to miss the subtle homicide and is more inclined to miscall a natural or accidental death as homicide, resulting in false arrest, false accusations, needless expenditure of public funds, waste of investigative time and delay in the investigation of other deaths.

The Coroner's Investigator responds to the scene of death and determines whether the Police Homicide Detail will be called. When homicide is obvious, the Coroner's Investigator responds as part of a team (other members include homicide investigators, photographers and criminologists). This office is responsible for the body, identification, inquiry into circumstances, manner and means of death (Gov. Code 27491.2). Beside the scene investigation, the Coroner's Investigator is responsible for recovering property, locating and notifying next of kin, and preparing a written summary of his investigation.

In about one-third to one-half of the homicides, a forensic pathologist responds to the scene, aiding in the investigation. The subsequent autopsy, including photography, may also use fluoroscopy, X-ray, angiography and other techniques to establish and define the number, nature and severity of wounds, to obtain evidence (i.e. bullets) and to prepare an official report. This report, including chemistry, serology and toxicology results, is used as part of the prosecution or defense of the case in the formal judicial hearing.

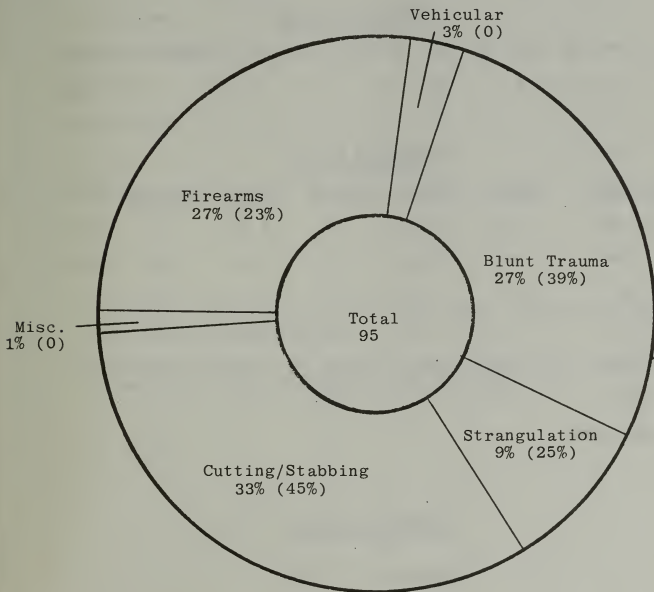
Pertaining to criminal trial, our judicial system requires identification of an individual and presentation of evidence, usually by virtue of expert testimony, relative to the cause of death or trauma associated with death. The Medical Examiner-Coroner's Office identifies the body, frequently relying on local police, CII, or FBI fingerprints. Expert forensic testimony is given by the Forensic Pathologist from this office. In addition, the Forensic Toxicologist is frequently called upon to testify on the significance and effect of

various drug levels, a matter of great importance when dealing with the concept of diminished capacity.

Of minor, but increasing importance, is the fact that, because of our excellent and advanced medical facilities, we are seeing more homicide and trauma cases transferred into the County for medical therapy. Should these individuals die, the autopsy and court testimony are done by this office.

HOMICIDES

Homicides are those deaths caused by another person, generally resulting in murder and manslaughter charges. In San Francisco, 95 homicides occurred in 1984-85, accounting for 5% of the total Medical Examiner investigations.



The percent in brackets indicates the percentage of victims in the category with a positive blood ethyl alcohol concentration.

HOMICIDES

Total Number of Homicides 95

Males 74 Females 21

COMPARISON BY MONTH

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL
4	9	10	8	4	11	8	8	7	7	12	7	95

COMPARISON BY AGE

<u>Age range</u>	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>
0 - 19	14	16	7	8	8
20 - 29	41	33	26	21	30
30 - 39	29	36	30	27	22
40 - 49	14	18	16	15	10
50 - 59	14	16	16	4	10
60 - 69	9	6	6	6	5
70 and above	4	7	2	3	10

COMPARISON BY RACE

Caucasian. 54

Black. 30

Asian and Other. . 11

HOMICIDE

COMPARISON BY METHOD

<u>Method</u>	<u>Number</u>	<u>Alcohol*</u>	<u>Drugs**</u>
Blunt trauma	19	37%	12%
Cutting/stabbing	31	45%	15%
Firearms	26	23%	12%
Strangulation	8	25%	13%
Vehicular	7	43%	20%
Drowning	0	0%	0%
Fire	0	0%	0%
Misc.	4	0%	0%

* Refers to percentage of victims (of those tested) with positive blood ethyl alcohol concentrations

** Refers to percentage of victims (of those tested) with positive blood drug abuse levels (heroin, cocaine, and/or amphetamines)

PATHOLOGY

In the Pathology department, the tissue and body fluid samples taken at autopsy are prepared for microscopic study, histochemically stained, or analyzed for chemical constituents. Cardiac pacemakers or other mechanical life-support devices are examined for any defect. Smears or "wet-mounts" are examined for spermatozoa, bacteria, or tuberculosis. Bacteriologic cultures may be taken, but, if pathogens are grown, they are usually sent to the Department of Public Health (state or local) for further identification. If indicated, "soft" X-rays or histochemical tests are done to establish entrance or exit gunshot wounds. Here, also, research techniques such as methods of obtaining fingerprints from the skin of a victim, are developed.

MONTHLY FIGURES

1984-1985

PATHOLOGY*

YEAR	TOTAL CORONER'S CASES	CASES REFERRED TO PATHOLOGIST	NO. OF ORGANS SUBMITTED	NO. OF SECTIONS TAKEN	HISTO- PATHOLOGIC SLIDES MADE	SPECIAL STAINS **	BLOOD GROUPINGS ***	OTHER DETERMINA- TIONS ****
1984								
JUL	148	102	1048	2678	525	39	8	370
AUG	155	91	1128	3171	636	27	15	536
SEP	134	98	1122	3356	612	68	8	205
OCT	139	84	943	2235	449	15	23	388
NOV	144	90	1038	2399	532	52	18	470
DEC	167	94	1043	2438	504	34	17	415
1985								
JAN	183	100	1003	2381	477	45	7	386
FEB	141	99	1110	2499	459	61	8	243
MAR	145	85	943	2449	470	45	25	569
APR	144	91	946	2357	533	42	16	244
MAY	134	96	1044	2692	527	53	14	502
JUN	153	82	768	1843	413	89	7	322
TOTALS	1787	1112	12136	30498	6137	570	166	4650

* These figures do not reflect photography, forensic radiology, or material prepared for teaching forensic pathology

** Includes smears examined for bacteria and spermatazoa

*** ABO and Anti-Rh

**** Blood, urine, water, evidence for: hematology, biochemistry, urinalysis, bacteriology, serology, "Sickledix," etc.

TOXICOLOGY

Toxicology is the science that deals with the detection and identification of drugs and poisons. In our work, any possible agent may be of importance in a death. The most common poisons in our community are prescription items. Other common agents are illegal drugs (street drugs), industrial compounds, certain gases and alcohol.

It is necessary not only to accurately detect and identify the agent or agents involved in a case, but to quantitate them precisely so that their exact relationship to the death, if any, can be evaluated. This determination must be as precise and specific as scientifically possible, and it must be able to stand up to review by any other qualified laboratory in the nation.

As a routine part of our work, we determine the levels of drugs in two or more body "compartments" such as blood and stomach contents, or combinations of three compartments, in order to answer the question of acute or chronic drug usage. This is of utmost importance in determining the time of ingestion, and therefore the intent of the ingestion - whether accidental or suicidal. Since the types and natures of the unidentified compounds can be so varied, the capabilities of this department must also be varied.

Extensive research is performed in this department, some of which deals with means of identifying unknown compounds in post-mortem samples. A current project is concerned with determining the types of drugs and their levels in both the victim and suspect in certain serious crimes. This information is then available to the courts to aid in the just determination of the innocence or guilt of the person charged with the crime.

TOXICOLOGY

July 1984 - June 1985

Incidence of various drugs or poisons found singly or in combination:

The drugs listed are not necessarily the cause of death or even a contributing cause. These figures reflect toxic agents present in the body to any degree. Any one case may have more than one drug or poison present. Also, the drugs/poisons listed may fit into more than one category and have been placed in a specific class on the basis of their most common usage.

ABUSE DRUGS

Alkaloids of morphine	83
Amphetamines	25
Cocaine	43
Codeine	25
Fentanyl	2
Methamphetamine	31
Methaqualone (Quaalude)	1
Phencyclidine (PCP)	7

ANTI-DEPRESSANTS

Amitriptyline (Elavil)	14
Desipramine (Norpramine)	3
Doxepin (Sinequan)	4
Imipramine (Tofranil)	1
Maprotiline	1
Nortriptyline (Aventyl)	12

ANALGESICS

Non-Narcotic

Acetaminophen	7
Salicylate	28
Zomepirac	1

Narcotic

Hydromorphone (Dilaudid)	2
Meperidine	3
Methadone	26
Methadone Metabolite	11
Propoxyphene (Darvon)	14
Norpropoxyphene (Darvon)	14

ANTIHISTAMINES

Diphenhydramine	4
Pyrilamine	2

ANOREXIANTS

Phenmetrazine	1
---------------	---

ANTI-ARRHYTHMICS, CARDIAC

Lidocaine	28
Metoprolol	1
Procainamide	1
Propranolol (Inderal)	3

ANTI CONVULSANTS

Diphenylhydantoin	15
Carbamazepine	1

MISCELLANEOUS

Ascorbic Acid	1
Cyanide	4
Insulin	5
Methemoglobin	2
THC	5
Theophylline	5

SEDATIVE-HYPNOTIC DRUGSBarbiturates

Pentobarbital	4
Phenobarbital	14
Secobarbital	3

Non-barbiturates

Chloral hydrate	2
N-Desalkylflurazepam	2
Meprobamate	1

TRANQUILIZERS, MINOR

(Used to treat anxiety)

Benzodiazepines

Chlordiazepoxide (Librium)	5
Diazepam (Valium)	25
Nordiazepam	23

TRANQUILIZERS, MAJOR

(Used to treat psychosis)

Phenothiazine derivatives

Chlorpromazine (Thorazine)	2
Thioridazine (Mellaril)	3
Trifluoperazine (Stelazine)	1

ANTIPSYCHOTIC AGENTS

Haloperidol	1
Loxapine	1

VOLATILE AGENTS AND GASES

Acetone	2
Carbon monoxide	17
"Brut" Deodorant Spray	1

METALS

Mercury	1
Magnesium	1
Lead	1

TOXICOLOGY

1984-1985

<u>Year/ Month</u>	<u>No. of Cases Referred to Toxicology</u>	<u>No. of Specimens Received</u>	<u>No. of Tests Performed</u>	<u>Alcohol Tested</u>	<u>Pos.</u>	<u>Barbiturates Tested</u>	<u>Pos.</u>
<u>1984</u>							
JUL	192	958	672	164	48	44	4
AUG	166	1128	653	159	56	42	0
SEP	142	1081	620	144	60	37	0
OCT	168	1016	775	166	49	44	1
NOV	153	1077	655	157	39	38	3
DEC	180	1143	763	187	54	48	2
<u>1985</u>							
JAN	209	1276	712	186	69	38	0
FEB	155	810	673	147	37	42	1
MAR	280	1122	988	138	39	39	2
APR	244	1209	1110	169	56	57	4
MAY	149	760	737	152	50	45	1
JUN	162	890	702	141	44	50	3
<hr/>							
TOTAL*	2200	12471	9060	1910	601	524	21

* Totals include outside agency cases.

HEROIN DEATHS

Morphine-type alkaloid (Heroin) deaths 31

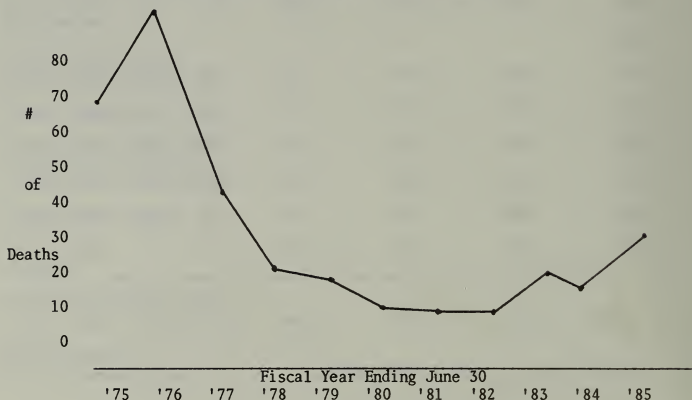
Sex Distribution	Male	26	(84%)
	Female	5	(16%)

Racial Distribution	Caucasian	25	(81%)
	Black	6	(19%)

Age Distribution

<u>16-20</u>	<u>21-35</u>	<u>26-30</u>	<u>31-35</u>	<u>36-40</u>	<u>41-over</u>
0	4	5	7	9	6

TEN YEAR COMPARISON OF HEROIN DEATHS



The data presented on the graph indicates an increase in the heroin-related deaths in San Francisco for the past three fiscal years.

FISCAL YEAR 1984 -1985

COCAINE DEATHS

- | | |
|---|---|
| 1. Cocaine Deaths: | 8 |
| 2. Cocaine in combination with other drugs:* | 7 |
| 3. Deaths where Cocaine present as incidental findings: | 2 |

2.*	Cocaine and M.T.A.	3	Alcohol Present 2
	Cocaine and Amphetamines	3	0
	Cocaine, M.T.A., & Amphet.	1	1
	Cocaine and Methadone	1	1
	Cocaine, Amphet, & Meth.	1	0
	Cocaine	8	7
	(M.T.A. : Morphine Type Alkaloids)		

SEX DISTRIBUTION:	Male:	16
	Female:	1

RACIAL DISTRIBUTION:	Caucasian:	11
	Black:	5
	Asian:	1

AGE DISTRIBUTION:

<u>16-20</u>	<u>21-25</u>	<u>26-30</u>	<u>31-35</u>	<u>36-40</u>	<u>41-Over</u>
0	2	8	5	1	1

GLOSSARY

ALKALOID OF MORPHINE GROUP	Typically referred to as morphine-type alkaloid, this is the chemical substance found in body fluids after the injection of heroin or other drugs derived from opium
TOXICOLOGY NOT VALID OR ELIMINATED	This term indicates that the deceased lived long enough after the injury to have eliminated some or all toxic agents from the body
FORENSIC PATHOLOGY	The specialty field of medicine involving the application of medical and pathology principles in determining the cause and manner of sudden, unexpected, and medically unattended deaths. This includes the type and nature of injury, public health hazards, type or nature of homicide weapon, the relation of injury to death and interpreting other factors for the court. These data are prepared and presented to the judicial system or public health interests in keeping with the best available knowledge
MODE OF DEATH	Indicates the manner of death, such as natural, accident, suicide or homicide, and is to be distinguished from cause of death, which is purely a medical determination
MODE EQUIVOCAL	With the cause of death undetermined, investigative data do not clearly differentiate between two modes of death, although some evidence supports either one
MODE UNDETERMINED	With the cause of death determined, investigative data do not clearly support one of two possible modes and either one is possible without prejudice
MODE UNKNOWN	Circumstances insufficient to indicate between two possible modes, as when only bones are found, or when no medical cause of death is determined
PATHOLOGY	That branch of medicine which deals with the essential nature of disease, especially in the structural or functional changes in tissues, organs or systems of the body causing disease. It involves the diagnosis of disease by microscopic or chemical analysis
SEROLOGY	That branch of pathology which deals with the analysis of blood and body fluids. Blood types for identification, exclusion of a suspect or judicial purposes are examples of the use in this office

TOXICOLOGY

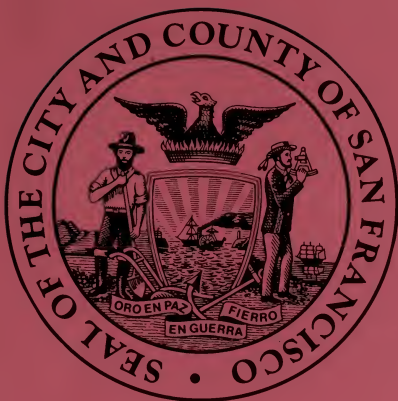
The scientific study of poisons, their detection, actions and treatment. The relationship of drug levels to emotional or personality change, behavioral or reasoning ability are frequent decisions based on these data

MEDICAL EXAMINER

A physician specifically trained in forensic pathology who is responsible for investigating and determining the cause and manner of sudden or unexpected death

AUTOPSY

A scientific dissection of the human body to determine the cause and nature of death in order to detect public health hazards, determine the method or type of death in homicides and improve the level of medical care in the community. In some cases, showing that no injury or wrongdoing was present is of great emotional and stabilizing value to the family



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ANNUAL REPORT

JULY 1, 1985 - JUNE 30, 1986

BOYD G. STEPHENS, M.D.
CHIEF MEDICAL EXAMINER
850 BRYANT STREET
SAN FRANCISCO, CALIF. 94103

CHIEF MEDICAL EXAMINER - CORONER
SAN FRANCISCO, CALIFORNIA

ANNUAL REPORT

JULY 1, 1985 - JUNE 30, 1986



BOYD G. STEPHENS, M.D.
CHIEF MEDICAL EXAMINER

JOSEPH E. SURDYKA
ADMINISTRATIVE CORONER

850 BRYANT STREET
SAN FRANCISCO, CALIF. 94103



September 1986

Honorable Dianne Feinstein, Mayor
Honorable Board of Supervisors
City and County of San Francisco
City Hall
San Francisco, California 94102

Dear Mayor Feinstein and Honorable Supervisors:

One of the significant differences between a Medical Examiner and a Coroner's system in the United States is the direct application of medicine to the living or the dead in medico-legal cases and the nature of the services to the community welfare. This is called the practice of Forensic Medicine. To reflect this practice, we have added to this report information about some of those functions in order to more accurately document the service performed.

This past year, there were many management and community problems that required attention. The numbers of homicides, heroin and cocaine deaths have increased dramatically as have problems with environmental and work place hazards. The question of missing children, cult killings and Satanic Masses along with the Lake and Eng killings in Calaveras required enormous time allocations. These problems, coupled with the changing financial base for the county have placed increasing management problems directly on this department.

As the service requirements change, we have tried to alter the report format to reflect and document this responsibility. We currently do not have a method of relating the perceived increasing amount of personnel time required for the increasing depth and quantity of work necessary to meet these demands. Additionally, the immense amount of volunteer time is not included.

Almost all of the objectives set for the department have been met or exceeded. The computerization of the department is slower than expected, but progressing, and the report on the county justification for an electron microscope has been submitted to the Mayor's office for review and action.

I believe the office has performed well over the past year, and continues to improve as staffing and support increases to meet the ever increasing demands of the community.

Sincerely,

A handwritten signature in dark ink, appearing to read "Boyd G. Stephens", followed by a horizontal line.

Boyd G. Stephens, M.D.
Chief Medical Examiner

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INTRODUCTION

The Medical Examiner-Coroner is appointed by law to many responsibilities, the foremost of which is the investigation and certification of a variety of deaths including all deaths of other than natural causation, and any apparently natural deaths in which no physician can reasonably state the cause. The Medical Examiner can utilize any and all medico-legal investigative techniques, including autopsy, to establish both the medical cause of death, and mode or circumstances of death (natural, accident, homicide, suicide or undetermined).

The deaths which must be reported to the Medical Examiner-Coroner, as required by various sections of the Government, Health and Safety and Penal codes are as follows:

1. Homicide - known or suspected
2. Suicide - known or suspected
3. Following accident or injury (whether the accident or injury is the primary cause or contributory; death occurring immediately or at some remote time)
4. Medical attendance of less than 20 Days
5. No physician in attendance
6. Physician unable to state the cause of death (must be unable, not merely unwilling)
7. Poisoning (food, chemical, drug, therapeutic agents)
8. Occupational or industrial deaths
9. All deaths where a patient has not fully recovered from an anesthetic, whether in surgery, recovery room, or elsewhere
10. All deaths in operating rooms
11. All solitary deaths (unattended by physicians or other person in the period immediately preceding death)
12. All deaths in which the patient is comatose throughout the period of the physician's attendance
13. All deaths of unidentified persons
14. Grounds to suspect that the death occurred in any degree from a criminal act
15. Contagious disease - known or suspected - and constituting a public health hazard
16. Deaths in prison or while under sentence
17. In the continued absence of a physician (not having seen the patient in 20 days prior to death)
18. Associated with a rape - known or alleged - or crime against nature
19. Related to or following abortion - known or suspected
20. Involving drowning, fire, hanging, gunshot, stabbing, cutting, starvation, exposure, alcoholism, drug addiction, strangulation or aspiration

Additional mandated responsibilities include protection and safekeeping of property belonging to deceased individuals; conducting inquests when indicated; maintaining proper public records; making reports to other agencies; identification of deceased persons; internment of indigent dead; and many other death-related activities.

FORENSIC MEDICINE

Forensic medicine is generally considered to be a marriage of medicine and the forensic sciences oriented to medico-legal issues. The field is wide ranging and growing, becoming even broader in scope than the traditional concept practiced in Europe.

There has been continued growth and accentuation of the role of forensic medicine in the legal and medico-legal world over the past year. Major cases like the Lake and Eng killings in Calaveras, the issue of Satanic and cult killings, and missing children has consumed enormous time and efforts. Our voluntary staff has contributed hundreds of hours on these problems, making the "investigation team" necessary for these types of cases possible. This office has continued its role in forensic medicine for both living and dead, playing a vital role in the community.

Generally, we receive little publicity for this work, yet in addition to our traditional work, we serve in a number of places in the community. Some of these include;

Examination and diagnosis of the living

- Examination and evaluation of child abuse
- Examination and evaluation of sexual assault
- Examination and evaluation of spousal abuse
- Evaluation of citizens' complaints against the police department
- Testimony and interpretation of hospital records and procedures
- Evaluation of force and patterned injuries
- Examination of victims and suspects for trace evidence and injuries
- Collection of blood from suspects and victims for serology, toxicology and other testing
- Court testimony on force, GBI, and other issues
- Alcohol and drug interaction in driving under the influence cases and related issues
- Physiologic effects of drug interactions
- Toxicology, including environmental and industrial toxicity
- Teaching-Hospitals, forensic, law enforcement, community

Examination and evaluation of the dead

- Scene investigation, reconstruction and analysis
- Evidence collection and testing
- Blood spatter analysis and interpretation
- Patterned evidence analysis and interpretation
- Trace evidence collection
- Time and place of death information
- Forensic Autopsy-consultation and interpretation
- Analysis for chemical and limited serology testing
- Forensic toxicology
- Consultation with District Attorney and Public Defender
- Analysis and court presentation
- Teaching-forensic and legal

The department faces some significant problems now and for the future. One of these is the increasing numbers of "designer drugs" made for a number of reasons, including the avoidance of the existing federal laws. These chemical analogs or new molecules constantly require new analytic approaches,

techniques and standards. Hazards to users, officers and laboratory personnel are largely unknown, and some of these compounds are so dangerous that skin contact can be lethal or produce delayed complications such as Parkinson's degeneration of the brain.

The ever increasing scientific capabilities in instrumentation and techniques mean increasing training and equipment for the department. Interfacing with other agencies and departments is increasing along with the need for information sources and sharing. These are some of the major problems for the future. The information and record issues will constitute a major decision and policy making step for the next five years. Although the initiation costs to the county will be relatively high, the long term benefits and costs savings will more than off-set this investment of time and money. The need to get access to major library data bases, legal information, and record management will be some of the most expensive and time consuming aspects of department management for this next five year period. The forensic world is growing so rapidly that it is difficult to foresee its exact direction. Trace evidence and serology are unquestionably going to be a large part of that future for the next five years, and this department will be right in the middle of these advances.

STATEMENT OF CURRENT MANAGEMENT AND SCIENTIFIC POSITION

Largely due to the immediate past Coroner, Dr. Henry Turkel, the physical facilities of the San Francisco Medical Examiner's Office are well designed and suitable to the forensic medicine usually practiced in this county. He had provided for room to expand, and this expansion is in process. This facility should be adequate to the county needs well into the 1990's and possibly beyond that. Our increasing work load has fallen specifically on two areas of the office, but affecting all divisions. The toxicology department has experienced both a significant work-load increase and also an expansion in purpose. A large portion of their work now includes forensic toxicology of specimens from living persons, as well as employment screening for new hires, and environmental exposure, probations violations, law enforcement exposures, citizen complaints against police and DUI cases involving unusual circumstances or questions.

The county has, over the past few years, been replacing the outmoded equipment in this department and improving the capabilities to meet the growing demands and requirements so that we can achieve this level of responsibility. We still need to improve the instrumentation and staffing in this department, and need to reorganize the structure of this department to reflect the increasing work and demands on the professional staff.

The second place this pressure is being felt is in the administration. The work load is greater than the staffing can handle. Many times, only one person is in the office to handle all telephone calls, process all the paperwork and interface with the public. With the potential for the Gann initiative, we stand to lose three or more experienced staff with the potential of replacement of most of the office staff by inexperienced and low paid persons.

ADMINISTRATIVE

Although staffing in this section is at the authorized level, it is marginal or inadequate for the work load. We are in the process of changing to a computerized system for handling not only our extensive word processing workload, but our office records as well. This process would include entering the initial deputies investigation on the computer, as well as all subsequent data, so that eventually, all records pertaining to a given case would be on the computer. This includes the laboratory reports. There are many advantages to this system and some significant dangers. The benefits include rapid access and retrieval by this department of any record on the system, immediate update and addition to the records by each authorized section, immediate access for read-only capability by other authorized departments, such as homicide, public defender and DA, markedly improved ability to access data for demographic and statistical information, and trend analysis of medical and social problems. It would delete the need to bind and maintain our records, currently a costly and difficult task, and would delete the major storage problems for the large volume of material. By adding evidence and property data management, chain of possession and property management can be improved. Our word processing experience has shown that although a lot of work to set up, these repetitive steps can be managed with a significant savings in time and personnel costs. In reflection of this new direction, a major goal is to reorganize this section of the department.

INVESTIGATIVE

This staff is up to the authorized numbers, with testing for permanent positions underway for three investigator positions. The deputies are being trained in the use of the computer for investigative input, and eventually will be trained for record retrieval. We are augmenting training on investigative requirements, hazardous materials and other requirements for these positions.

The religious objection to the autopsy has not been the legal problem that was suggested, although this may become true in the future. Why this wasn't a problem is unclear, but the advertised public information push that the authors declared would be performed apparently was not or has not been used to force the issue. So far, we have handled these issues with each individual family, and have not had to go to court.

Tissue donations are an increasing problem, and the deputies are involved more frequently in this issue. Considerable time is spent in seeking hospital admission blood, urine, clothing and other evidence, since there is usually no attempt made to save this material at the hospital. We are currently working with the administration at SFGH, and the tissue procurement centers to correct these problems.

There is continued training for the deputies, all being either current or the new hires to be current in PC 832 requirements. We also are continuing our in-house training and send some deputies each year to other programs. This aspect is unchanged from the description last year.

TOXICOLOGY

Toxicology has continued to show the most departmental growth and expansion. The expansion of the laboratory is essentially completed, and the current construction is oriented towards laboratory safety and OSHA safety compliance. This project is in the final states of planning, and construction will start at or immediately after the new year. Besides the problems of compliance with the hazardous material act, the necessity for training, inventory, disposal and purchasing are more than the staffing of the department can handle. We will be requesting one full time person to take the responsibility for this work as well as supporting the operations of the laboratory on a daily basis, freeing scientific staff to do their work. The volume of cases has increased considerably, and this is reflected for the first time in the report by showing some of the data on 11550, DUI, recruit and other types of cases handled by the department. There is simply no other place in the county where this capability and expertise is available, and as the needs of the courts and others grow, we expect the demands on this department to grow.

AUTOPSY FACILITIES

There is a continuous increase in the use of the isolation room for infectious cases and this is reflected in the report for the first time. Since there are no data for past use, there is limited ability to interpret this change, however we are aware of the increased use and costs associated with performing these cases. The facility is old enough that we will be requiring some significant capital improvement monies for repair and update in the near future.

INQUEST DIVISION

We have not experienced the anticipated problems with SB 1824 (Objection to the autopsy on religious grounds) that had been expected. The inquest has remained a valuable method of investigation and resolution, especially for manner of death. Again, because of the time and legal aspects of the proceedings, we would like to see the proceedings handled by a judge with the special background in forensic medicine necessary to the types of cases and issues heard.

FORENSIC PATHOLOGY DIVISION

This division continues to bear the brunt of the work load for court and evidence collection. More of the time of the staff is involved in teaching, case review for DA and PD attorneys and review of cases involving living victims. The teaching program continues to be well accepted and we believe serves a vital purpose in the community.

CONSULTATION SERVICE

Expert consultation in the field of forensic medicine continues to consume a considerable amount of time and effort. We have tried to limit these cases so that the required departmental income is maintained, yet the staff time is controlled so that our primary responsibility to the department is met. Currently, only two of the staff routinely do consultations for which the department bills. The costs of travel and similar expenses are out-of-pocket, and there is no realistic method of reimbursement for these costs within the county framework. This plus the demands of the courts and the time involved detract from the departments work. On the other hand, the recognition and utilization of our capabilities in noteworthy cases shows the benefits of forensic medicine in the community, and offsets the costs to the taxpayer for these services.

Expert consultation in the field of forensic medicine continues to increase in numbers and scope. Currently, we do the laboratory testing and much of the court interpretation in sexual assault cases that are examined at SFGH. We frequently examine children and adults for evidence of injury in issues of assault, child abuse, wife abuse and police assaults. We are part of an active child abuse prevention program through a committee designed to detect abuse or family stress in cases of death, and potentially prevent similar instances in siblings in the same family. We are also active in suicide prevention programs, and support drug abuse and poison control programs.

We are active in drunk driving programs, including detection, analysis, evaluation and court interpretation of evidence. This is partially within the Mayor's Drunk Driving Program, and partly through other programs. We routinely perform analysis of biologic samples for the District Attorney, occasionally for the Public Defender and commonly for the highway patrol. We would then be subject to testify in court on the medical or toxicologic aspects of the case.

Our Forensic Anthropologist, Dr. Roger Heglar and our Forensic Odontologist, Dr. Oliver Harris have volunteered hundreds of hours of painstaking work on medioco-legal cases.

This office, working in conjunction with the Northern California Transplant Bank at Pacific Medical Center was responsible for over 24 donors during the fiscal year 1985-86. Approximately 30% of our referrals became donors. Another example of serving the living.

Forensic medicine serves many useful purposes in this community. It is our goal to have a worthwhile and widely beneficial program that grows with the needs of community for service to both the living and the dead.

MAJOR DEPARTMENTAL PROBLEMS

There is a continuing problem with the issue of tissue and organ harvest. The difference in the need to improve and prolong life is more and more being forced into direct conflict with the needs of the legal system to insure that the constitutional rights of victim and accused are insured. As medical capabilities to transplant continue to increase, the demands on acute trauma deaths as an ideal tissue source increase. Since some or many of these cases are under the jurisdiction of the medical examiner, there is an increasing unresolved conflict. Partly because of new laws that don't consider the effects on the court system, there is a recent acceleration of these problems. More and more, victims are removed from the scene, resuscitated, and although unsalvageable, placed on life support for hours or days in the event that they may be a source for tissue or organs. During this time, trace evidence is lost, toxic or legally important drugs and chemicals are being metabolized, clothing is lost and injuries are healing or disappearing. Generally, the responsible transplant centers are becoming more aware of this problem. They have become more interested in supporting laws and local policy that insure the documentation and collection of important evidence so that there will not be any reduction of their harvest source. Locally, this is being done by mutual agreement, but it needs to be based on state laws and education for the medical community so that there is general awareness of the significance of and the nature of evidence that must be collected.

There has been a significant increase in the numbers of contagious cases that require autopsy. There are only two isolation autopsy facilities that I know of in the community, here and at SFGH. Although AIDS cases are generally considered to be natural deaths, and the death certificate can be signed by the treating physician, un-natural deaths or sudden and unexpected deaths can only be handled by this office. The numbers of these cases has increased significantly, so that they are almost a weekly occurrence. Besides the potential risk to the staff, the costs of performing these cases is at least three times higher per case because of the protective equipment required, the extensive staff time for both the performance of the procedure and the decontamination afterwards. There is an increased risk and handling cost in the laboratories and for specimen destruction afterwards.

Finally, there is a major departmental problem in compliance with both the spirit and law in hazardous materials regulations. As an office staffed almost entirely by employees with advanced degrees, mostly in the medical and laboratory sciences, many of these regulations and requirements are simplistic and unrealistic. However, the thrust of the law requires a considerable amount of staff time which we currently don't have and haven't been able to meet. The training requirements, regulations and documentation requirements and much of the documentation are just not physically possible with the existing staff. In order to comply, we will have to have a staff increase of one person to prepare the records and documents, insure the training process and destruction compliance necessary by this act. We also need informed clarification of portions of these sweeping changes. To make all solvents, glues, adhesives, etc. designated hazardous materials is not scientifically valid or reasonable. By law, each piece of Scotch tape, or empty bottle of "White Out" requires the full compliment of hazardous material protection. The wording and interpretation of these laws have to be changed to be realistic and the department must be brought into compliance with both the employee protection aspects of the law and the environmental perspectives.

ONE YEAR PLAN-1987

This plan is based on the completion of the following stages during 1986-87

1. Completion of the toxicology emergency exit, expansion and revision of exhaust system.
2. Procurement of equipment and instrumentation authorized in the current budget.
3. Staffing of a laboratory manager/hazardous material manager position.
4. Approval and procurement of a scanning electron microscope.
5. Compliance with hazardous waste, hazardous training and facility requirements.

Since one of the continuing major goals of the department is the upgrading of instrumentation and capabilities of the department commensurate with the requirements of the times. This is a major financial commitment of the county affecting the judicial, health and legal systems for years into the future.

Equipment requested

Atomic absorption spectrophotometer
Auto-injection equipment for current instruments
Computer on-line and interface for existing and new equipment not already configured.
Computer modum for library interface and query
Additional storage and refrigeration for legal specimens

THREE YEAR PLAN

This plan is predicated on the procurement of adequate equipment, instrumentation and staff to perform excellent quality forensic medicine and to have the capability to expand as necessary to meet the changing requirements of the courts, the legal system, community health and teaching requirements for the county.

Staffing of permanent full-time laboratory manager

A active forensic science center for other law enforcement agencies

Computer modum with access to national sources for chemical, toxicology and forensic sciences

All department records in computer format, including retrieval and analytical capabilities for data recovery.

Gradual replacement of office furniture and modernization

Continued capital improvement and revision of the facilities

FIVE YEAR PLAN

The primary plan for the next five years is to continue to improve the training and status for the investigators and the forensic staff. To perform this task, we have to have the equipment and management capabilities, as well as the support of several sectors.

- continue upgrading equipment and facilities

- continue training

- Improve inquest system, including the provision for a judge as the hearing officer.

- Potential for becoming a recognized education or training center in forensic medicine

- Continue work in sexual assault, child abuse and other types of assault cases

DEPARTMENTAL

ADMINISTRATION

DEPARTMENTAL ADMINISTRATION

MBO - PERFORMANCE MEASURES AND GOAL ACHIEVEMENTS DURING 1985-86

04B Objective measure - to maintain out-of-county consultations by the Chief Medical Examiner to provide revenue to the office.

During the fiscal year of 1985-86 there were 42 out-of-county consultations. The number of out-of-county consultations provided by this office is dependant upon requests from out-of-county agencies. These requests in turn, are determined by the needs of the out-of-county agencies relative to difficult and complex cases. Other than informing other agencies of the capabilities of this office and the availability of consultant services, this office cannot control the number of consultation requests made. The revenue to the office was maintained.

04C Objective measure - to establish and maintain quarterly records of time spent by the Chief Medical Examiner and his assistants on in-county court cases.

This objective was attained. Quarterly records of time spent by the Chief Medical Examiner on in-county court cases during the fiscal year of 1985-86 show that the Chief Medical Examiner and his assistants appeared in court 143 times and spent a total of 511 hours in consultations, preparation, and court appearances.

04D Objective measure - to effect identification of at least 90% of unidentified cases within 30 days.

This goal was reached. Of a total of 196 unidentified cases, 93% were identified within 30 days. Nine (9) were never identified.

04E Objective measure - to increase the expertise of field investigators by implementing 20 hours of training per investigator.

DEPARTMENTAL ADMINISTRATION (Continued)

During the 1985-86 fiscal year the ten investigators received 172 hours of training, not attaining our objective of 20 hours per investigator. However, for three quarters of Fiscal Year 1985-86 due to illness and retirement office only maintained seven investigators.

04F Objective measure - to transcribe all traumatic gross autopsy reports within 24 hours of completion of the autopsies.

This objective was attained. Gross autopsy reports from all the traumatic death cases received by this office were all transcribed within 24 hours of the autopsy.

04G Objective measure - to transcribe all non-traumatic gross autopsy reports within 5 days of completion of the autopsies.

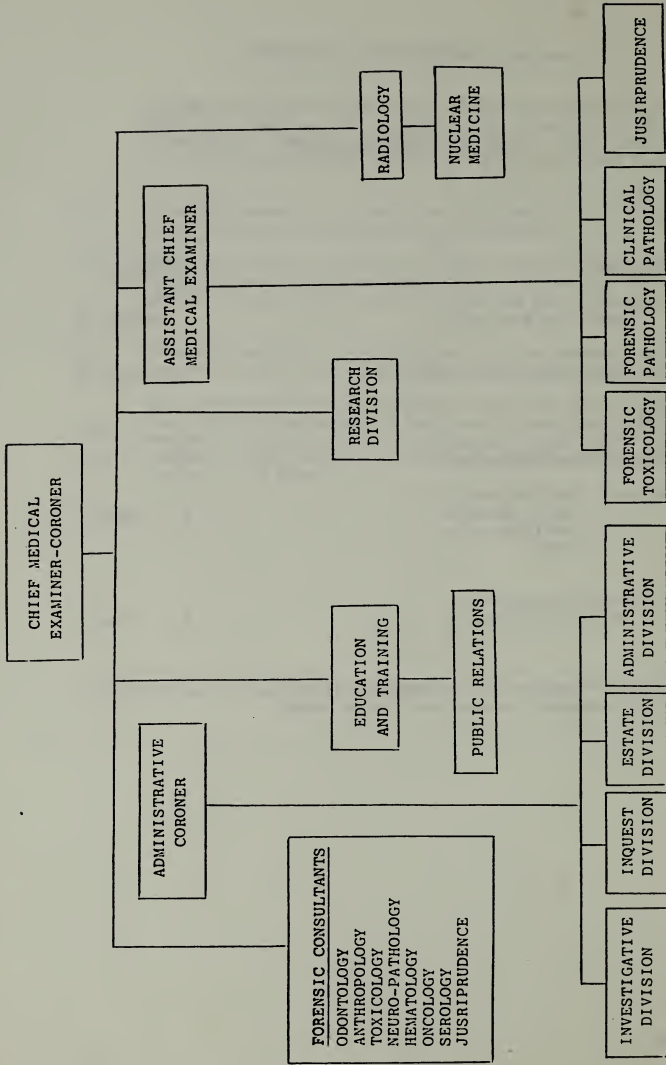
This objective was nearly attained, 90% of the gross autopsy reports from cases of non-traumatic death were transcribed within 5 days of completion of the autopsies. During this fiscal year, the transcription of a large back-log of cases was completed and transcription is current to the month.

DEPARTMENTAL COSTS

1985 - 86

Total Budget	\$1,860,317.00
Transfers to the Controller, Health and Retirement	287,455.00
NET BUDGET (all other costs)	1,572,862.00
Total cases	4198
Cost per cases investigated	\$ 375.00
Revenues (sales of records, public auctions, fee-for-service work)	\$ 59668.00
Total Costs <u>Ad Valorum</u> Taxes Per Case Investigated	\$ 360.00

As indicated elsewhere, this includes all investigative, administrative, scientific and expert witness costs to the county.



City & County of San Francisco
 Chief Medical Examiner/Coroner's
 Office
 Function and Organization Chart
 Date: June 1985

CHIEF MEDICAL EXAMINER-CORONER'S OFFICE

- Directs operation of the department
- Investigates and medically evaluates all deaths where causes are undetermined
- Establishes procedure and work standards
- Directs and evaluates effectiveness of personnel
- Presides at inquests and examines witnesses
- Testifies in court as expert witness

(1) CHIEF MEDICAL EXAMINER/CORONER (2584)

STENOGRAPHIC SECRETARY

- Performs highly specialized stenographic/secretarial duties
- Serves as confidential secretary

(1) Stenographic secretary (1452)

ADMINISTRATIVE & INVESTIGATIVE DIVISION

- Assists in directing the administrative and legal activities and functions
- Acts for Medical Examiner in his absence
- Coordinates and enforces departmental policies

(1) Administrative Coroner (2581)

ESTATE SECTION

- Receives, accounts for and transfers personal property
- Assigns and reviews work of clerical unit
- Assists with preparation of budget
- Initiates all purchases and payment for operation of office
- Handles confidential files & mail

(1) MANAGEMENT ASSISTANT (1842)

INVESTIGATIVE SECTION

- Investigates circumstances of death under jurisdiction of Medical Examiner
- Takes charge of bodies, evidence, and property
- Notifies next of kin or legal representatives
- Prepares detailed reports
- Operates ambulance
- Fingerprints deceased persons

(11) CORONER'S INVESTIGATORS (2580)

CLERICAL SECTION

- Transcribes medical reports from dictation equipment
- Operates word processing
- Types case histories, mail, files all
- Assists public relations to cases
- Assists public relations to deaths in office and telephones

(4) MEDICAL TRANSCRIBER TYPISTS (1440)

(1) MEDICAL CLERK STENOGRAPHER (1461)

INQUEST SECTION

- Records testimony at all inquests
- Arranges for transcription of inquest testimony
- Records depositions

(1) COURT REPORTER (P. T.) (8138)

FORENSIC TOXICOLOGY & SKELETON SECTION

- Conducts chemical examination of tissues & fluids in forensic & other forensically significant cases
- Records & prepares case histories & reports
- Maintains equipment, ensures quality assurance of methods & procedures & monitors compliance with standards
- Consults with courts, police, District Attorney, Public Defender, City Attorney, physicians & other significant people
- Provides expert testimony in court

- (1) TOXICOLOGIST (2158)
- (2) ASSISTANT TOXICOLOGISTS (2156)
- (1) LABORATORY ANALYST (2157)
- (1) STAFF ASSISTANT (2140)

CLINICAL & FORENSIC PATHOLOGY SECTION

- Performs autopsies
- Dictates medical findings and prepares related case records and reports
- Confers with courts, police and district attorney
- Performs routine clinical laboratory tests relating to pathogenic microbes or other specimens
- Performs specialized identification work on badly decomposed bodies
- Maintains laboratory and autopsy rooms
- Conducts Forensic Medical Seminars and lectures

- (2) SENIOR PHYSICIAN SPECIALISTS (2222)
- (2) POST M.D. VISITORS (2241)
- (2) CLINICAL LABORATORY TECH. (2243)
- (3) FORENSIC AUTOPSY TECH. (2523)

FORENSIC

INQUIRY

FORENSIC INQUIRY

MBO - PERFORMANCE MEASURES AND GOAL ACHIEVEMENTS DURING 1985-86

06A Objective measure - to increase by 10% over last year the toxicological examinations of out-of-county referrals in order to increase revenues to the office.

The target for this fiscal year was 24 cases. This target was exceeded - the actual number of cases referred from outside of the county for toxicological testing was 33.

06B Objective measure - to decrease turnaround time by 10% for Coroner's toxicological tests over last year in order to decrease the waiting period for completion of death certificates and other legal documents.

A total of 1,809 Coroner's cases were submitted for toxicological testing. The goal of testing 100% of these cases was reached during each quarter of the fiscal year. The turnaround time (the average number of days required for toxicology tests to be completed) decreased to 4.0 days in the first and second quarter, to 6 days in the third quarter and 5.0 days in the fourth quarter. The turnaround time was at the goal of 5 days. The number of outstanding cases at the end of each quarter decreased with none remaining at the end of the fiscal year. The improved performance demonstrate the addition of 2 full-time positions and a subsequent concerted effort to maximize the overall performance of the toxicology laboratory.

06D Objective measure - to increase to 18.5% the number of Coroner's cases which are tested for common abuse drugs.

The number of Coroner's cases tested for common abuse drugs during the 1985-86 fiscal year was 676.

FORENSIC INQUIRY (Continued)

06E Objective measure - to decrease turnaround time by 50% over last year for toxicological testing of persons accused of, or victims of major felonies.

Specimens from persons accused of, or from victims of major felonies were recieved on a total of 117 cases. The average number of cases in which testing was not completed by the end of the quarter was 2. The average number of days required to complete testing on these cases was 5.0 calendar days.

06F Objective measure - to complete autopsies on all non-traumatic deaths within 24 hours.

All autopsies on the 1,160 non-traumatic deaths which were received were completed within 24 hours, meeting the target.

06G Objective measure - to complete autopsies on traumatic deaths within 24 hours.

All (100%) of the autopsies on the 617 traumatic death cases received were completed within 24 hours, meeting the target for this objective.

06H Objective measure - to establish and maintain quarterly records of time spent by the Forensic Toxicologist on in-county court cases.

Records of the amount of time the Forensic Toxicologist spent on in-county court proceedings were established and maintained during this fiscal year. These records show that the Forensic Toxicologist made 16 court appearances, spending 30 hours in court and 143 hours in consultations. Subpoenas received during fiscal year 62.

FISCAL YEAR 1985-86

Total Deaths in County	8,317
Total Deaths Reported to Coroner	4,198
Cases Reported, Investigated and Cleared by the Coroner or physician's signature	2,412
Coroner's Cases	1,786

% Reported to Coroner	50.5
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% County Deaths Having Coroner's Jurisdiction	21.4
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Cases Accepted by Coroner

1. Natural Deaths	1,131	(63.0%)
2. Accidents	292	(16.0%)
3. Suicides	161	(9.0%)
4. Homicides	120	(7.0%)
5. Mode Equivocal	53	(3.0%)
6. Cause Unknown	10	(0.6%)
7. Sudden Infant Death Syndrome	19	(1.0%)
8. Private Autopsies	34*	

* Not included in above figures.

Autopsies performed	1,634
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Autopsy Index	91.4%
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Burials Authorized by Coroner

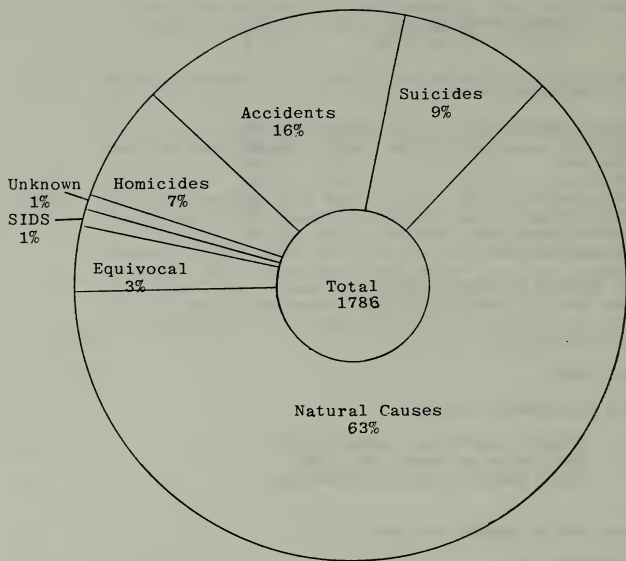
1. Indigents and fetuses buried by City	190
2. Cases buried by funeral home with Public Administrator-controlled funds	35

Inquests Held or Depositions Taken	27
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Identification

1. Persons brought to Coroner's Office with insufficient identification	206
2. Persons subsequently identified by fingerprints, dental X-rays or other means	197
3. Persons buried as unidentified	9
4. Fingerprints taken and forwarded to FBI, CII, or SFPD	1,673

MEDICAL EXAMINER CASES FOR 1985-86



MEDICAL EXAMINER CASES

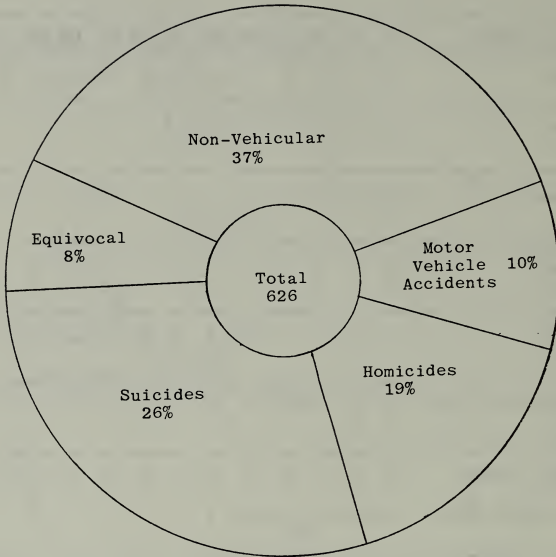
1985-1986

Monthly Comparison

MANNER OF DEATH	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
Natural	101	93	80	87	93	113	101	95	88	100	94	86	1131
Unknown	3	1	1	2	1	0	0	2	0	0	0	0	10
Equivocal	5	5	3	3	2	5	5	7	4	9	2	3	53
Suicide	10	10	11	13	12	18	15	15	19	12	8	18	161
Homicide	12	11	5	7	12	9	8	11	5	12	16	12	120
Industrial Accident	1	1	1	0	0	0	5	0	0	0	0	0	8
Accident - Other	11	21	17	21	21	23	13	25	19	20	14	18	223
Motor Vehicle Acc.	8	10	3	5	6	4	4	3	4	6	6	2	61
*SIDS	1	2	2	1	2	2	3	2	1	2	1	0	19
PRIVATE AUTOPSIES (Not in above total.)	2	3	3	4	3	1	1	6	4	3	1	3	34
TOTALS	148	155	134	139	144	167	183	141	145	144	134	153	1786

*SIDS - Sudden Infant Death Syndrome

VIOLENT DEATHS



Violent deaths are those caused by any non-natural means, including drugs. In San Francisco, 626 violent deaths occurred during the fiscal year 1985-86, accounting for 35% of the Medical Examiner death investigations.

VIOLENT DEATHS

Of the 1,786 deaths investigated by the Coroner's Office during 1985-86, 626 were determined to be the result of violence.

<u>Mode</u>	<u>Total No.</u>	<u>% of Coroner's Cases</u>	<u>% of County Deaths</u>
ACCIDENT	292	16	3.5
Motor vehicle	61	3.5	
Non-vehicular	231	12.0	
Industrial	8	0.5	
SUICIDE	161	9.0	1.9
HOMICIDE	120	6.7	1.4
EQUIVOCAL	53	3.0	0.6

VIOLENT DEATHS

Racial Distribution

<u>RACE</u>	<u>Accident</u>	<u>Suicide</u>	<u>Homicide</u>	<u>Mode Equivocal</u>	<u>TOTAL</u>
Caucasian	218	141	68	34	461
Black	46	7	43	16	112
Asian and Other	28	13	9	3	53
TOTALS	292	161	120	53	626

Distribution by Sex

Male	209	107	87	35	438
Female	83	54	33	18	188
TOTALS	292	161	120	53	626

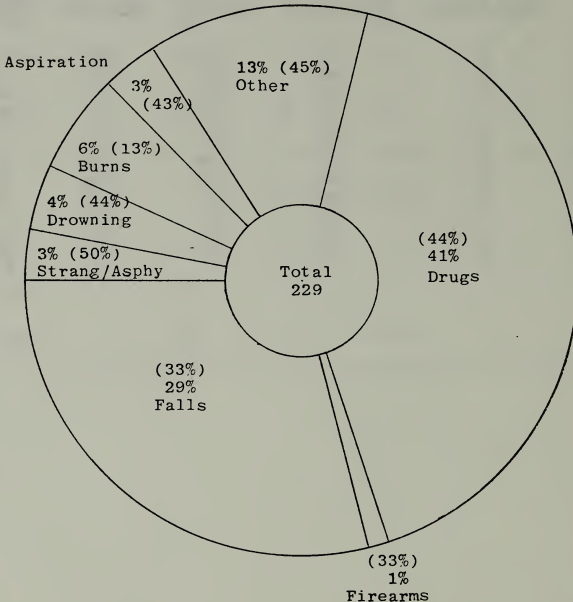
VIOLENT DEATHS

MODE OF DEATH--YEARLY COMPARISON

<u>YEAR</u>	<u>Motor Vehicle</u>	<u>Non-Vehicular</u>	<u>SUICIDES</u>	<u>HOMICIDES</u>	<u>TOTALS</u>
73-74	82	256	220	137	695
74-75	89	349	224	126	788
75-76	105	363	195	151	814
76-77	75	226	233	149	683
77-78	81	271	194	145	691
78-79	94	246	233	103	676
79-80	94	199	208	114	615
80-81	106	191	179	136	612
81-82	74	240	183	132	629
82-83	74	245	173	104	596
83-84	51	230	182	84	547
84-85	60	214	153	95	522
85-86	61	231	161	120	573

NON-VEHICULAR ACCIDENTS

This category includes all unintentional fatalities except for traffic deaths. There were 229 accidental deaths which accounted for 13% of the Medical Examiner death investigations for the fiscal year of 1985-86.



The percent in brackets indicates the percentage of victims in the category with a positive blood ethyl alcohol concentration.

INDUSTRIAL ACCIDENTS

1985-1986

Total Number of Industrial Accidents 8

MEANS

Traumatic Injury 8

SEX

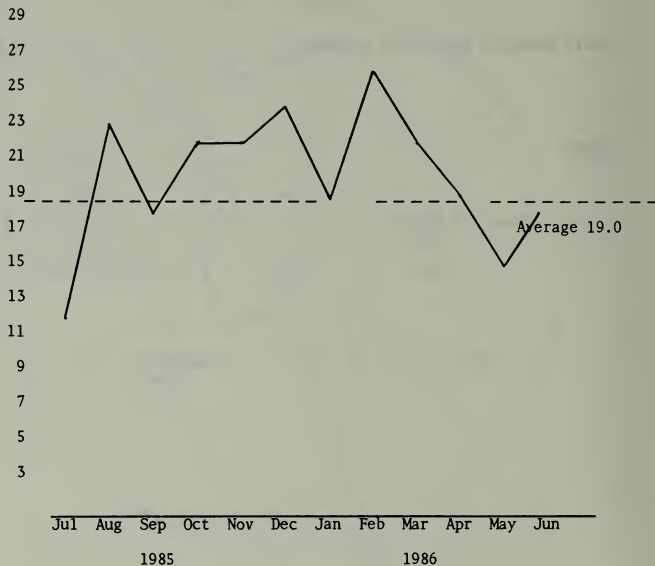
Male 8

Female 0

ACCIDENTS

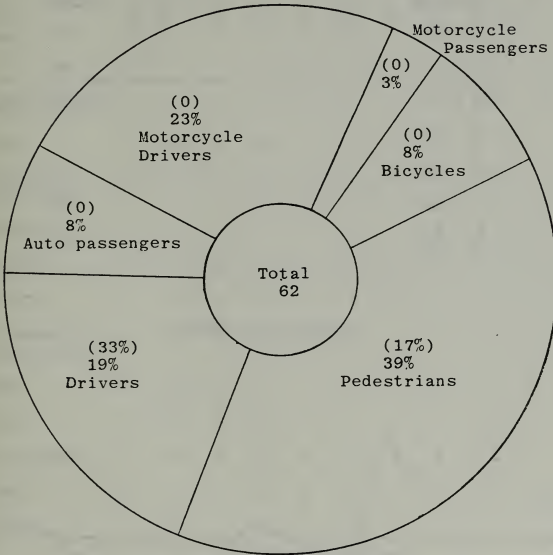
(Including Industrial)

Comparison by Month



TRAFFIC

In San Francisco, there were 62 traffic-related fatalities, accounting for 3% of the Medical Examiner death investigations for the fiscal year 1985-86.



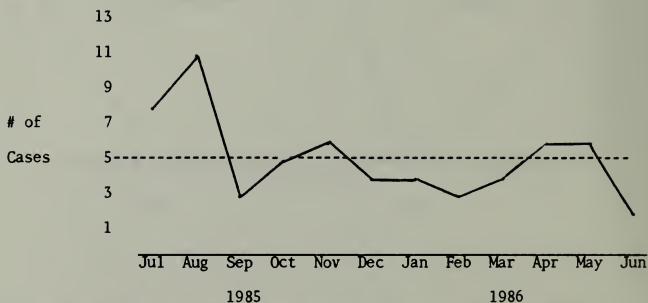
The figure in brackets indicates the percentage with positive blood ethyl alcohol.

TRAFFIC (VEHICULAR) DEATHS

Comparison by Age

<u>Age Group</u>	<u>Number</u>
0 - 19	12
20 - 29	16
30 - 39	9
40 - 49	5
50 - 59	2
60 - 69	6
70 - 99	12

Comparison by Month



ACCIDENTAL DEATHS

	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>Tot.</u>
TOTAL MONTH	12	22	17	21	21	23	18	25	21	18	14	17	231

Male	6	17	14	14	13	15	13	18	17	12	13	12	165
Female	6	5	3	7	8	8	5	7	4	7	1	5	66

MANNER OF DEATH

Drugs	5	13	8	10	7	4	1	14	11	7	6	9	95
Aspiration/ food bolus	1	0	1	0	1	1	0	0	1	1	0	1	7
Drowning	1	0	1	1	1	3	0	0	0	0	2	0	9
Asphyxia	1	2	0	1	0	0	0	1	0	0	1	0	6
Firearms	0	0	0	0	0	1	1	0	0	0	0	0	2
Gas/Smoke/CO Inhalation	0	0	0	0	0	0	0	0	0	0	0	0	0
Burns	0	2	0	1	1	3	5	1	1	0	1	0	15
Falls	1	4	7	5	8	7	5	8	5	8	3	6	67
Toxic Poison	0	0	0	0	1	0	0	0	0	0	0	0	1
Other	3	1	0	2	1	4	6	1	3	3	1	1	27

MOTOR VEHICLE DEATHS

8	10	3	5	6	4	5	3	4	6	6	2	62
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RACIAL COMPARISONS

Caucasian	10	16	16	15	16	18	12	20	15	13	11	17	179
Black	2	5	1	4	4	2	4	4	3	2	2	1	35
Asian and Other	0	1	0	2	1	3	2	1	3	3	1	0	16

SUICIDE

The determination of suicide as a manner of death represents the summation of scene investigation, including a review of psychological state, autopsy, pathology, toxicology and, frequently, other investigation. To the best of our knowledge, this is the only Coroner's Office performing toxicology on multiple organs and/or body fluids routinely in order to evaluate the metabolic status of a drug or drugs.

Realizing the immense emotional impact on family, the diagnosis of suicide is never made lightly, and always represents a decision made on the basis of data sufficient to defend that decision in a court of law, if necessary. Should these data be inconclusive, the victim automatically gets the benefit of the doubt.

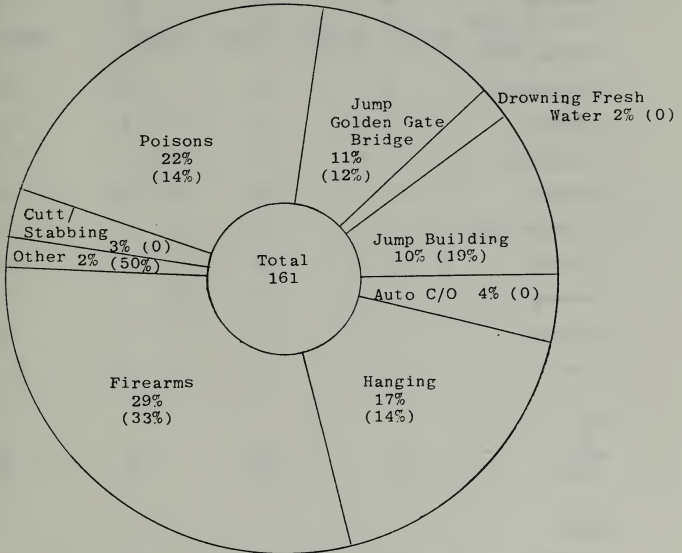
Suicide takes a tremendous toll of our young people. The relative number jumping from the Golden Gate bridge would not seem to warrant the publicity assigned them as compared to the evident need for help for individuals using other methods.

To help understand the problem, and, hopefully, to aid in reduction of suicides, this office has supported suicidology research and prevention programs for many years. It is hoped that this work will help to reduce this needless loss.

The majority of these deaths are situational reactions, and, given momentary trained support, are potentially preventable.

SUICIDES

Suicides are self-inflicted deaths. In San Francisco, 161 suicides occurred, accounting for 9% of the Medical Examiner death investigations for the fiscal year of 1985-86.



The percent in brackets indicates the percentage of victims in the category with a positive blood ethyl alcohol concentration.

SUICIDES

TOTAL NUMBER 1985-86 161

<u>METHOD</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>
Poisoning	46	38	34	36
Jump/G.G. Bridge	22	19	18	17
Jump/Bay Bridge	1	2	0	0
Jump/Building	16	23	15	16
Auto/CO	7	4	8	6
Plastic bag	2	1	1	2
Hanging	26	28	29	28
Cutting/stabbing	7	10	4	5
Firearms	36	48	34	46
Drowning	9	1	0	3
Burning	6	2	0	1
Other	1	2	10	1

SEX

Male	123	138	112	107
Female	50	44	41	54

RACE

Caucasian	145	143	127	141
Black	12	22	11	7
Asian and Other	16	17	15	13

SUICIDES

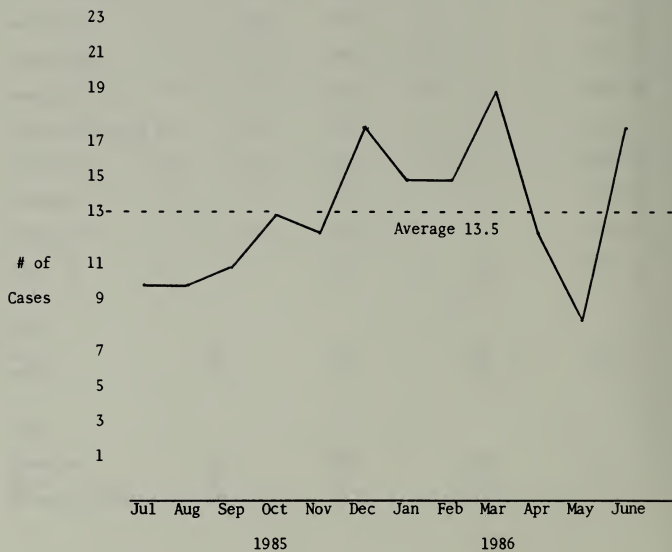
Comparison by Age

Number per Year

<u>Age Range</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>
0 - 19	7	9	4	7	7
20 - 29	56	37	34	27	29
30 - 39	48	48	44	37	46
40 - 49	26	20	21	25	18
50 - 59	13	20	26	20	18
60 - 69	17	17	20	21	19
70 - 79	12	18	18	15	12
80 - 89	3	9	12	4	10
90 - 99	1	2	3	2	2

SUICIDES

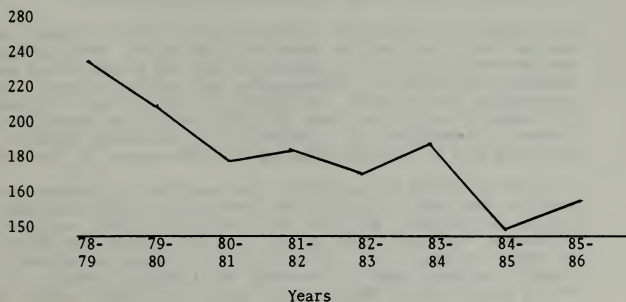
Comparison by Month



SUICIDES

COMPARISON BY YEARS

METHOD	78-79	79-80	80-81	81-82	82-83	83-84	84-85	85-86
Poisoning	83	52	55	50	46	38	34	36
Hand Gun	40	40	31	36	36	48	34	46
Golden Gate Bridge	19	21	21	18	22	19	18	17
Total Suicides by Year	233	208	179	183	173	182	153	161



HOMICIDE

Homicide is the killing of one human by another. Murder is the unlawful killing of a human being with malice. The following data do not differentiate homicide as to whether it is justifiable, accidental or murder. Such distinctions are the proper function of the judicial system and are not the responsibility or function of this office.

Any judicial system dealing with crimes involving death requires a well-trained staff and well-equipped Medical Examiner-Coroner's Office that can and will interpret the forensic findings in an unbiased, fair manner. This investigation must be intense, accurate and rapid enough so that the charges against one or more individuals may be pursued or dismissed without unfairly affecting their constitutional rights. This is the purpose of this office.

The proper evaluation and investigation of a homicide begins, naturally, at the scene. In the majority of cases, a member of this office (either the Coroner's investigator, Administrative Coroner, or Medical Examiner), determines whether a death is a potential homicide. It has been well-documented that, if such a determination is made by an individual inexperienced or untrained in death investigation, his opinion will be wrong in 50% of the cases. Such a person is very apt to miss the subtle homicide and is more inclined to miscall a natural or accidental death as homicide, resulting in false arrest, false accusations, needless expenditure of public funds, waste of investigative time and delay in the investigation of other deaths.

The Coroner's Investigator responds to the scene of death and determines whether the Police Homicide Detail will be called. When homicide is obvious, the Coroner's Investigator responds as part of a team (other members include homicide investigators, photographers and criminologists). This office is responsible for the body, identification, inquiry into circumstances, manner and means of death (Gov. Code 27491.2). Beside the scene investigation, the Coroner's Investigator is responsible for recovering property, locating and notifying next of kin, and preparing a written summary of his investigation.

In about one-third to one-half of the homicides, a forensic pathologist responds to the scene, aiding in the investigation. The subsequent autopsy, including photography, may also use fluoroscopy, X-ray, angiography and other techniques to establish and define the number, nature and severity of wounds, to obtain evidence (i.e. bullets) and to prepare an official report. This report, including chemistry, serology and toxicology results, is used as part of the prosecution or defense of the case in the formal judicial hearing.

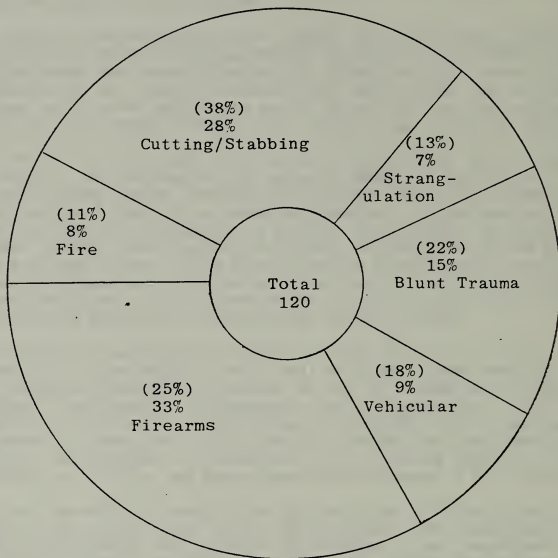
Pertaining to criminal trial, our judicial system requires identification of an individual and presentation of evidence, usually by virtue of expert testimony, relative to the cause of death or trauma associated with death. The Medical Examiner-Coroner's Office identifies the body, frequently relying on local police, CII, or FBI fingerprints. Expert forensic testimony is given by the Forensic Pathologist from this office. In addition, the Forensic Toxicologist is frequently called upon to testify on the significance and effect of

various drug levels, a matter of great importance when dealing with the concept of diminished capacity.

Of minor, but increasing importance, is the fact that, because of our excellent and advanced medical facilities, we are seeing more homicide and trauma cases transferred into the County for medical therapy. Should these individuals die, the autopsy and court testimony are done by this office.

HOMICIDES

Homicides are those deaths caused by another person, generally resulting in murder and manslaughter charges. In San Francisco, 120 homicides occurred in 1985-86, accounting for 7% of the total Medical Examiner investigations.



The percent in brackets indicates the percentage of victims in the category with a positive blood ethyl alcohol concentration.

HOMICIDES

Total Number of Homicides 120

Males 87 Females 33

COMPARISON BY MONTH

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL
12	11	5	7	12	9	8	11	5	12	16	12	120

COMPARISON BY AGE

<u>Age range</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>
0 - 19	16	7	8	8	9
20 - 29	33	26	21	30	40
30 - 39	36	30	27	22	27
40 - 49	18	16	16	10	18
50 - 59	16	16	4	10	7
60 - 69	6	6	6	5	4
70 and above	7	2	3	10	15

COMPARISON BY RACE

Caucasian. 68

Black. 43

Asian and Other. . . 9

HOMICIDE

COMPARISON BY METHOD

<u>Method</u>	<u>Number</u>	<u>Alcohol*</u>	<u>Drugs**</u>
Blunt trauma	18	15%	22%
Cutting/stabbing	34	28%	35%
Firearms	40	33%	25%
Strangulation	8	38%	15%
Vehicular	11	18%	18%
Drowning	0	0%	0%
Fire	9	0%	0%
Misc.	0	0%	0%

* Refers to percentage of victims (of those tested) with positive blood ethyl alcohol concentrations

** Refers to percentage of victims (of those tested) with positive blood drug abuse levels (heroin, cocaine, and/or amphetamines)

PATHOLOGY

In the Pathology department, the tissue and body fluid samples taken at autopsy are prepared for microscopic study, histochemically stained, or analyzed for chemical constituents. Cardiac pacemakers or other mechanical life-support devices are examined for any defect. Smears or "wet-mounts" are examined for spermatozoa, bacteria, or tuberculosis. Bacteriologic cultures may be taken, but, if pathogens are grown, they are usually sent to the Department of Public Health (state or local) for further identification. If indicated, "soft" X-rays or histochemical tests are done to establish entrance or exit gunshot wounds. Here, also, research techniques such as methods of obtaining fingerprints from the skin of a victim, are developed.

MONTHLY FIGURES

1985-1986

PATHOLOGY*

<u>YEAR</u>	<u>TOTAL CORONER'S CASES</u>	<u>CASES REFERRED TO PATHOLOGIST</u>	<u>NO. OF ORGANS SUBMITTED</u>	<u>NO. OF SECTIONS TAKEN</u>	<u>HISTO- PATHOLOGIC SLIDES MADE</u>	<u>SPECIAL STAINS **</u>	<u>BLOOD GROUPINGS ***</u>	<u>OTHER DETERMINA- TIONS ****</u>
1985								
JUL	151	112	1178	2844	606	35	22	475
AUG	155	122	1216	3150	638	28	14	282
SEP	122	81	828	2165	433	36	21	446
OCT	139	111	1007	2524	540	57	17	513
NOV	149	121	1005	2932	566	40	30	589
DEC	174	118	1059	3121	525	17	23	202
1986								
JAN	155	102	806	2133	360	6	22	439
FEB	160	105	858	2216	487	0	15	283
MAR	140	87	670	1933	498	42	15	538
APR	161	129	1092	2769	930	80	15	427
MAY	141	97	740	2430	773	42	15	360
JUN	139	108	872	1645	743	61	16	535
TOTALS	1786	1293	11331	29862	7099	441	225	5089

- * These figures do not reflect photography, forensic radiology, or material prepared for teaching forensic pathology
- ** Includes smears examined for bacteria and spermatazoa
- *** ABO and Anti-Rh
- **** Blood, urine, water, evidence for: hematology, biochemistry, urinalysis, bacteriology, serology, "Sickledix," etc.

TOXICOLOGY

Toxicology is the science that deals with the detection and identification of drugs and poisons. In our work, any possible agent may be of importance in a death. The most common poisons in our community are prescription items. Other common agents are illegal drugs (street drugs), industrial compounds, certain gases and alcohol.

It is necessary not only to accurately detect and identify the agent or agents involved in a case, but to quantitate them precisely so that their exact relationship to the death, if any, can be evaluated. This determination must be as precise and specific as scientifically possible, and it must be able to stand up to review by any other qualified laboratory in the nation.

As a routine part of our work, we determine the levels of drugs in two or more body "compartments" such as blood and stomach contents, or combinations of three compartments, in order to answer the question of acute or chronic drug usage. This is of utmost importance in determining the time of ingestion, and therefore the intent of the ingestion - whether accidental or suicidal. Since the types and natures of the unidentified compounds can be so varied, the capabilities of this department must also be varied.

Extensive research is performed in this department, some of which deals with means of identifying unknown compounds in post-mortem samples. A current project is concerned with determining the types of drugs and their levels in both the victim and suspect in certain serious crimes. This information is then available to the courts to aid in the just determination of the innocence or guilt of the person charged with the crime.

TOXICOLOGY

July 1985 - June 1986

Incidence of various drugs or poisons found singly or in combination:

The drugs listed are not necessarily the cause of death or even a contributing cause. These figures reflect toxic agents present in the body to any degree. Any one case may have more than one drug or poison present. Also, the drugs/poisons listed may fit into more than one category and have been placed in a specific class on the basis of their most common usage.

ABUSE DRUGS

Alkaloids of morphine	135
Amphetamines	34
Cocaine	77
Codeine	39
Methamphetamine	57
Methaqualone (Quaalude)	3
Phencyclidine (PCP)	25

ANTI-DEPRESSANTS

Amitriptyline (Elavil)	21
Desipramine (Norpramine)	3
Doxepin (Sinequan)	3
Imipramine (Tofranil)	3
Nortriptyline (Aventyl)	14

ANALGESICS

Non-Narcotic

Acetaminophen	9
Salicylate	30

Narcotic

Oxycodone	1
Meperidine	2
Methadone	12
Methadone Metabolite	3
Propoxyphene (Darvon)	8
Norpropoxyphene	9

ANTIHI STAMINES

Diphenhydramine	3
Ephedrine	5

ANTI-ARRHYTHMICS, CARDIAC

Lidocaine	24
Procainamide	1
Propranolol(Inderal)	1

MISCELLANEOUS

Cyanide	7
Insulin	1
THC	4
Theophylline	6

ANTI CONVULSANTS

Diphenylhydantoin	19
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SEDATIVE-HYPNOTIC DRUGSBarbiturates

Pentobarbital	6
Phenobarbital	13
Secobarbital	3
Butalbital	1

AGENTS AGAINST GOUT

Colchicine	2
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ANALEPTICS

Caffeine	1
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TRANQUILIZERS, MINOR
(Used to treat anxiety)Benzodiazepines

Chlordiazepoxide (Librium)	1
Diazepam (Valium)	26
Nordiazepam	21

TRANQUILIZERS, MAJOR
(Used to treat psychosis)Phenothiazine derivatives

Chlorpromazine (Thorazine)	2
Thioridazine (Mellaril)	2
Trifluoperazine (Stelazine)	1

ANTIPSYCHOTIC AGENTS

Thiothixene	1
Lorazepam	2

VOLATILE AGENTS AND GASES

Acetone	8
Carbon monoxide	21
Chloroform	1
Nitropane	1

METALS

Lithium	2
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ANTI-INFLAMMATORY AGENTS

Caffeine	1
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TOXICOLOGY

1985-1986

<u>Year/ Month</u>	<u>No. of Cases Referred to Toxicology</u>	<u>No. of Specimens Received</u>	<u>No. of Tests Performed</u>	<u>Alcohol Tested</u>	<u>Pos.</u>	<u>Barbiturates Tested</u>	<u>Pos.</u>
<u>1985</u>							
JUL	179	909	808	164	50	55	1
AUG	178	993	878	160	53	71	2
SEP	126	695	614	136	53	40	2
OCT	145	853	755	155	57	60	3
NOV	151	812	718	164	44	58	4
DEC	203	1116	987	218	71	71	2
<u>1986</u>							
JAN	194	884	782	167	54	52	0
FEB	181	964	852	196	56	57	3
MAR	149	772	683	144	46	35	3
APR	174	939	830	173	60	47	2
MAY	135	733	648	150	59	16	0
JUN	166	921	814	169	46	56	1
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TOTAL*	1981	10591	9369	1996	649	618	23

Totals include outside agency cases.

HEROIN DEATHS

Morphine-type alkaloid (Heroin) deaths 71

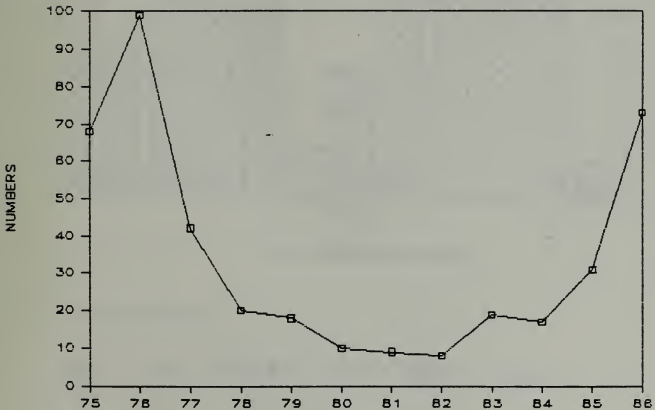
Sex Distribution	Male	58	(82%)
	Female	13	(18%)

Racial Distribution	Caucasian	60	(84%)
	Black	11	(16%)

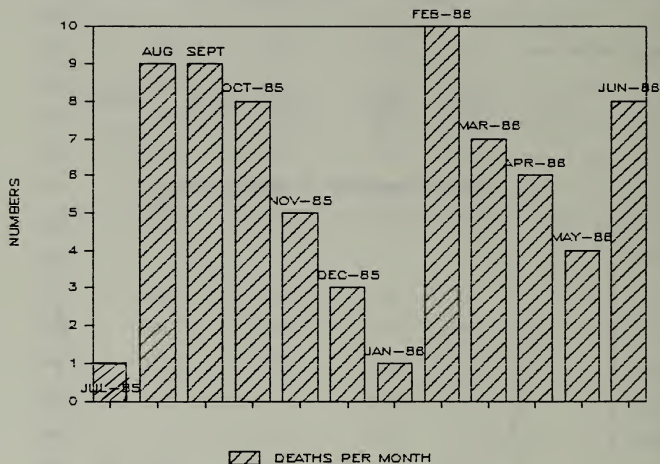
Age Distribution

<u>16-20</u>	<u>21-35</u>	<u>26-30</u>	<u>31-35</u>	<u>36-40</u>	<u>41-over</u>
4	7	10	19	16	15

TEN YEAR COMPARISON OF HEROIN DEATHS



The data presented on the graph indicates an increase in the heroin-related deaths in San Francisco for the past three fiscal years.



HEROIN DEATHS

FISCAL YEAR 1984 -1985

COCAINE DEATHS

1. Cocaine Deaths:	6	
2. Cocaine in combination with other drugs:*	4	
3. Deaths where Cocaine present as incidental findings:	6	
2.* Cocaine and M.T.A.	2	Alcohol Present 1
Cocaine and Amphetamines	2	1
Cocaine, M.T.A., & Amphet.	1	1
Cocaine and Methadone	2	0
Cocaine, Amphet, & Meth.	1	0
Cocaine	8	2
(M.T.A.: Morphine Type Alkaloids)		

SEX DISTRIBUTION: Male: 13
 Female: 3

RACIAL DISTRIBUTION: Caucasian: 9
 Black: 5
 Asian: 0

AGE DISTRIBUTION:

<u>16-20</u>	<u>21-25</u>	<u>26-30</u>	<u>31-35</u>	<u>36-40</u>	<u>41-Over</u>
0	1	6	6	2	1

GLOSSARY

ALKALOID OF MORPHINE GROUP	Typically referred to as morphine-type alkaloid, this is the chemical substance found in body fluids after the injection of heroin or other drugs derived from opium
TOXICOLOGY NOT VALID OR ELIMINATED	This term indicates that the deceased lived long enough after the injury to have eliminated some or all toxic agents from the body
FORENSIC PATHOLOGY	The specialty field of medicine involving the application of medical and pathology principles in determining the cause and manner of sudden, unexpected, and medically unattended deaths. This includes the type and nature of injury, public health hazards, type or nature of homicide weapon, the relation of injury to death and interpreting other factors for the court. These data are prepared and presented to the judicial system or public health interests in keeping with the best available knowledge
MODE OF DEATH	Indicates the manner of death, such as natural, accident, suicide or homicide, and is to be distinguished from cause of death, which is purely a medical determination
MODE EQUIVOCAL	With the cause of death undetermined, investigative data do not clearly differentiate between two modes of death, although some evidence supports either one
MODE UNDETERMINED	With the cause of death determined, investigative data do not clearly support one of two possible modes and either one is possible without prejudice
MODE UNKNOWN	Circumstances insufficient to indicate between two possible modes, as when only bones are found, or when no medical cause of death is determined
PATHOLOGY	That branch of medicine which deals with the essential nature of disease, especially in the structural or functional changes in tissues, organs or systems of the body causing disease. It involves the diagnosis of disease by microscopic or chemical analysis
SEROLOGY	That branch of pathology which deals with the analysis of blood and body fluids. Blood types for identification, exclusion of a suspect or judicial purposes are examples of the use in this office

TOXICOLOGY

The scientific study of poisons, their detection, actions and treatment. The relationship of drug levels to emotional or personality change, behavioral or reasoning ability are frequent decisions based on these data

MEDICAL EXAMINER

A physician specifically trained in forensic pathology who is responsible for investigating and determining the cause and manner of sudden or unexpected death

AUTOPSY

A scientific dissection of the human body to determine the cause and nature of death in order to detect public health hazards, determine the method or type of death in homicides and improve the level of medical care in the community. In some cases, showing that no injury or wrongdoing was present is of great emotional and stabilizing value to the family

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A N N U A L R E P O R T

JULY 1, 1986 - JUNE 30, 1987

BOYD G. STEPHENS, M.D.
CHIEF MEDICAL EXAMINER
850 BRYANT STREET
SAN FRANCISCO, CALIF. 94103

CHIEF MEDICAL EXAMINER - CORONER
SAN FRANCISCO, CALIFORNIA



ANNUAL REPORT

JULY 1, 1986 - JUNE 30, 1987

BOYD G. STEPHENS, M.D.
CHIEF MEDICAL EXAMINER

JOSEPH E. SURDYKA
ADMINISTRATIVE CORONER

850 BRYANT STREET
SAN FRANCISCO, CALIF. 94103



January 1988

Honorable Art Agnos, Mayor
Honorable Board of Supervisors
City and County of San Francisco
City Hall
San Francisco, California 94102

Dear Mayor Agnos and Honorable Supervisors:

One of the significant differences between the Medical Examiner and a Coroner's system in the United States is the direct application of medicine to the living or the dead in the medico-legal cases and the nature of the services to the community welfare. This is called the practice of Forensic Medicine. To reflect this practice, we have added to this report information about some of those functions in order to more accurately document the service performed.

This past year, there were many management and community problems that required attention. The numbers of homicides, heroin and cocaine deaths have increased dramatically as have problems with environmental and work place hazards. The question of missing children, cult killings and Satanic Masses along with the Lake and Eng killings in Calaveras required enormous time allocations. These problems, coupled with the changing financial base for the county have placed increasing management problems directly on this department.

As the service requirements change, we have tried to alter the report format to reflect and document this responsibility. We currently do not have a method of relating the perceived increasing amount of personnel time required for the increasing depth and quantity of work necessary to meet these demands. Additionally, the immense amount of volunteer time is not included.

Almost all of the objectives set for the department have been met or exceeded. The computerization of the department is slower than expected, but progressing, and the report on the county justification for an electron microscope has been submitted to the Mayor's office for review and action.

I believe the office has performed well over the past year, and continues to improve as staffing and support increases to meet the ever increasing demands of the community.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Boyd G. Stephens', followed by a horizontal line.

Boyd G. Stephens, M.D.
Chief Medical Examiner

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INTRODUCTION

The Medical Examiner-Coroner is appointed by law to many responsibilities, the foremost of which is the investigation and certification of a variety of deaths including all deaths of other than natural causation, and any apparently natural deaths in which no physician can reasonably state the cause. The Medical Examiner can utilize any and all medico-legal investigative techniques, including autopsy, to establish both the medical cause of death, and mode or circumstances of death (natural, accident, homicide, suicide or undetermined).

The deaths which must be reported to the Medical Examiner-Coroner, as required by various sections of the Government, Health and Safety and Penal codes are as follows:

1. Homicide - known or suspected
2. Suicide - known or suspected
3. Following accident or injury (whether the accident or injury is the primary cause or contributory; death occurring immediately or at some remote time)
4. Medical attendance of less than 20 Days
5. No physician in attendance
6. Physician unable to state the cause of death (must be unable, not merely unwilling)
7. Poisoning (food, chemical, drug, therapeutic agents)
8. Occupational or industrial deaths
9. All deaths where a patient has not fully recovered from an anesthetic, whether in surgery, recovery room, or elsewhere
10. All deaths in operating rooms
11. All solitary deaths (unattended by physicians or other person in the period immediately preceding death)
12. All deaths in which the patient is comatose throughout the period of the physician's attendance
13. All deaths of unidentified persons
14. Grounds to suspect that the death occurred in any degree from a criminal act
15. Contagious disease - known or suspected - and constituting a public health hazard
16. Deaths in prison or while under sentence
17. In the continued absence of a physician (not having seen the patient in 20 days prior to death)
18. Associated with a rape - known or alleged - or crime against nature
19. Related to or following abortion - known or suspected
20. Involving drowning, fire, hanging, gunshot, stabbing, cutting, starvation, exposure, alcoholism, drug addiction, strangulation or aspiration

Additional mandated responsibilities include protection and safekeeping of property belonging to deceased individuals; conducting inquests when indicated; maintaining proper public records; making reports to other agencies; identification of deceased persons; internment of indigent dead; and many other death-related activities.

The work with the living is discussed elsewhere.

FORENSIC MEDICINE

Forensic medicine is generally considered to be a marriage of medicine and the forensic sciences oriented to medico-legal issues. The field is wide ranging and growing, becoming even broader in scope than the traditional concept practiced in Europe.

There has been continued growth and accentuation of the role of forensic medicine in the legal and medico-legal world over the past year. Major cases like the Lake and Eng killing in Calaveras, the issue of Satanic and cult killings, and missing children has consumed enormous time and efforts. Our voluntary staff has contributed hundreds of hours on these problems, making the "investigation team" necessary for these types of cases possible. This office has continued its role in forensic medicine for both living and dead, playing a vital role in the community.

Generally, we receive little publicity for this work, yet in addition to our traditional work, we serve in a number of places in the community. Some of these include:

Examination and diagnosis of the living;

- Examination and evaluation of child abuse
- Examination and evaluation of sexual assault
- Examination and evaluation of spousal abuse
- Evaluation of citizens' complaints against the police department
- Testimony and interpretation of hospital records and procedures
- Evaluation of force and patterned injuries
- Examination of victims and suspects for trace evidence and injuries
- Collection of blood from suspects and victims for serology, toxicology and other testing
- Court testimony on force GBI, and other issues
- Alcohol and drug interaction in driving under the influence cases and related issues
- Physiologic effects of drug interactions
- Toxicology, including environmental and industrial toxicity
- Teach-Hospital, forensic, law enforcement, community

Examination and evaluation of the dead;

- Scene investigation, reconstruction and analysis
- Evidence collection and testing
- Blood spatter analysis and interpretation
- Patterned evidence analysis and interpretation
- Trace evidence collection
- Time and place of death information
- Forensic Autopsy-consultation and interpretation
- Analysis for chemical and limited serology testing
- Forensic toxicology
- Consultation with District Attorney and Public Defender
- Analysis and court presentation
- Teach-forensic and legal medicine

The department faces some significant problems now and for the future. One of these is the increasing numbers of "designer drugs" made for a number of

reason, including the avoidance of the existing federal laws. These chemical analogues or new molecules constantly require new analytic approaches, techniques and standards. Hazards to users, officers and laboratory personnel are largely unknown, and some of the compounds are so dangerous that skin contact can be lethal or produce delayed complications such as Parkinson's degeneration of the brain.

The ever increasing scientific capabilities in instrumentation and techniques mean increasing training and equipment for the department. Interfacing with other agencies and departments is increasing along with the need for information sources and sharing. These are some of the major problems for the future. The information and record issue will constitute a major decision and policy making step of the next five years. Although the initiation costs to the county will be relatively high, the long term benefits and costs savings will more than off-set this investment of time and money. The need to get access to major library data bases, legal information, and record management will be some of the most expensive and time consuming aspects of department management for this next five year period. The forensic world is growing so rapidly that it is difficult to foresee its exact direction. Trace evidence and serology are unquestionably going to be a large part of that future for the next five years, and this department will be right in the middle of these advances.

STATEMENT OF CURRENT MANAGEMENT AND SCIENTIFIC POSITION

The physical facilities of the San Francisco Medical Examiner's office are well designed and are suitable for the forensic medicine work routinely performed in this county. Some facility improvements are planned for this year to improve the safety features of the building, features that were unknown or not required at the time of the initial construction in the 1960's. Additionally, because of the increasing work load, the toxicology department is being expanded to allow for the new instrumentation necessary for analysis of the types of drugs used today. Many of these new and dangerous drugs which are available in the community, can only be detected by sophisticated equipment since the biologic levels are so very low. There is still some personnel issues, which are being addressed with the help of civil service, and should be largely resolved in the near future. Many of the problems of administration for the department pertain to the record and data handling procedures which are quite out of date. Changes are underway to computerize many of the routine investigative reports, as well as most of the operating records of the department. If the department can be completely computerized, much of the unnecessary paperwork can be eliminated, thereby streamlining the functions of the office and bringing productivity more in line with other county offices. These proposed changes allow us to more properly address our primary function-the practice of forensic medicine, and spend less time on the mechanics of paper generation.

I ADMINISTRATIVE

Staffing in this section has recently been brought to the required level. There is a need to restructure the office so that job descriptions, work-loads and salaries properly meet the actual work requirements and needs of the facility. Training is now completed for basic computer utilization, and the office is

being changed to computerization of records without major difficulties. All investigational records are being converted to computer format, which will aid in record keeping and distribution, and reduce bookbinding costs. This will allow direct exchange of records with other agencies that have need for our information, as well as improving the productivity of the office.

II INVESTIGATIVE

One new deputy position has been authorized and has been staffed. A primary job assignment for this person will be follow-up investigations. This will reduce the work load on the forensic pathologists, allowing them to do other work, and improve the accuracy of the work we produce. Currently, many times there simply isn't enough time to do the degree of investigation required to insure that all the appropriate information is available prior to court testimony or completion of a case.

Our total case load appears to be staying about the same as far as numbers with the deputies investigating approximately 4000 cases annually. Legislation is likely to make the deputies work significantly more difficult by requiring evaluation for tissue donation and investigation for religious statement of no autopsy preference as part of their investigation procedure. The religious bill will require that this office take on some degree of legal advocacy position since it will require a public court hearing in superior court anytime that we believe an autopsy is required to determine the cause and manner of death, but where the patient has signed a statement of religious preference opposing the autopsy. This will require close and frequent cooperation between the city attorney and the superior courts. Because it takes a routine medical decision and makes it an open court advocacy procedure, we expect that there will be considerable negative press representation, and a high probability of legal action against the county. Under this law, if a person drives his car at high speed onto a sidewalk, injuring several people and causing his own death, but has a signed religious preference document, the coroner or medical examiner would be prohibited from taking samples or performing an autopsy except by court order. Anytime that death was sudden and unexpected, but not obviously homicide or contagious, and an autopsy was needed to determine the cause and manner of death, a court hearing would be required if the religious document was indicated by a relative or friend. It is difficult to predict the actual extent of this law or the actual costs to the county at this time. One religious group has indicated that they will be starting an extensive campaign to encourage people of all religions to sign these documents.

All the deputies have completed the P.C. 832 basic course, and several have completed the basic blood spatter course. Most have received additional formal training on evidence and forensic medicine over the year. The two new deputies will complete the P.C.832 course this year. The next major education goal for the deputies will be in report writing. Additionally, because the investigational needs of the department are changing, we have changed the requirements for the deputies deleting the requirement for a mortuary background, upgrading the educational and writing capabilities to move the job description more in line with the job requirements.

Improvements in the equipment and facilities for the deputies has continued during the year, and will continue into the next year. There is an increasing requirement for the deputies to go to court. With the turn over in deputy district attorneys and public defenders, plus the changes in the appellate courts, strict requirements for evidence presentation becomes more and more common. This appears to be largely due to Proposition 8 requirements, as well as the changes in the policy of the court of appeals. As such, a budget item for court funding for the deputies may become necessary in the next budget.

III TOXICOLOGY

More than any other department in this office, toxicology has shown the most growth and need to expand. Current in this year's budget is a major expansion and refurbishing of the laboratory to both expand its capabilities and to simultaneously improve the safety and protection of personnel and equipment in the laboratory. To protect the very expensive electronic equipment, a Halon fire extinguisher system, which is computer compatible, has been installed. A rear safety exit and other safety changes bring the section up to current fire and safety code compliance for both OSHA and fire codes.

A continuing problem is the never ending stream of new street drugs and the increasing numbers of drugs, both legitimate and illegal, that have physiologic levels so low that very special equipment is necessary for their detection. One good example is Fentanyl and its chemical analogs. This drug is being reported many times in counties around San Francisco, but so far we have not detected it here. We have detected it in "street buys," of evidence recovered from various cases. It has been reported in a number of nearby counties. More and more, low physiological levels are true of the pharmaceuticals prescribed by physicians. It is also true for some of the older illegal preparations seen on the street. Examples are LSD and some of the drug metabolites. A gas chromatograph/mass spectrograph has made a considerable difference in laboratory capabilities. This equipment is extremely beneficial to this department as well as aiding work from the crime laboratory and the SFGH toxicology laboratory. Additionally, toxicology has been doing all the testing for the police recruit program and other work.

IV AUTOPSY FACILITIES

There has been a significant increase in the autopsies of contagious or suspicious infectious cases over the past year. This is partly due to the AIDS epidemic present in the community. We are finding more cases, such as TB that require isolation autopsies. The incidence of contagious diseases is increasing. We need to continue to improve our capabilities to work with contagious diseases. Employee safety is a major concern. Improved photographic documentation capability of evidence was achieved in the past budget.

V INQUEST DIVISION

We have not experienced the anticipated problems with SB 1824 (Religious Bill) since its enactment in January 1985. We continue to rely on the traditional inquest. This division is adequately staffed for the current level of work.

VI FORENSIC PATHOLOGY DIVISION

The teaching program suffered a setback, but we are on the road to returning it to the previous level of activity. It had received wide acclaim, and has been given budget support. The fellowship program is approved by the AMA for two positions.

VII CONSULTATION SERVICE

Expert consultation in the field of forensic medicine continues to increase in numbers and scope. Currently, we do the laboratory testing and some of the court presentation in sexual assault cases that are examined at SFGH. We frequently examine children and adults for evidence of injury or non-injury in issues of assault in cases of child abuse, wife abuse and police assaults. We are part of an active child abuse prevention program through a committee designed to detect abuse or family stress in cases of death, and potentially prevent similar instances in siblings in the same family. We are also active in suicide prevention programs.

We are active in drunk driving programs, including detection, analysis, evaluation and court presentation of evidence. This is partially within the Mayor's Drunk Driving Program, and partly through other programs. We routinely perform analysis of biologic samples for the district attorney, public defender or highway patrol, and testify in court on the medical or toxicologic aspects of the case.

Our Forensic Anthropologist, Dr. Roger Hagler and our Forensic Odontologist, Dr. Oliver Harris have spent hundreds of hours on the Calaveras County Case, with many more hours needed to complete their painstaking work. This case is likely to go to court in the near future.

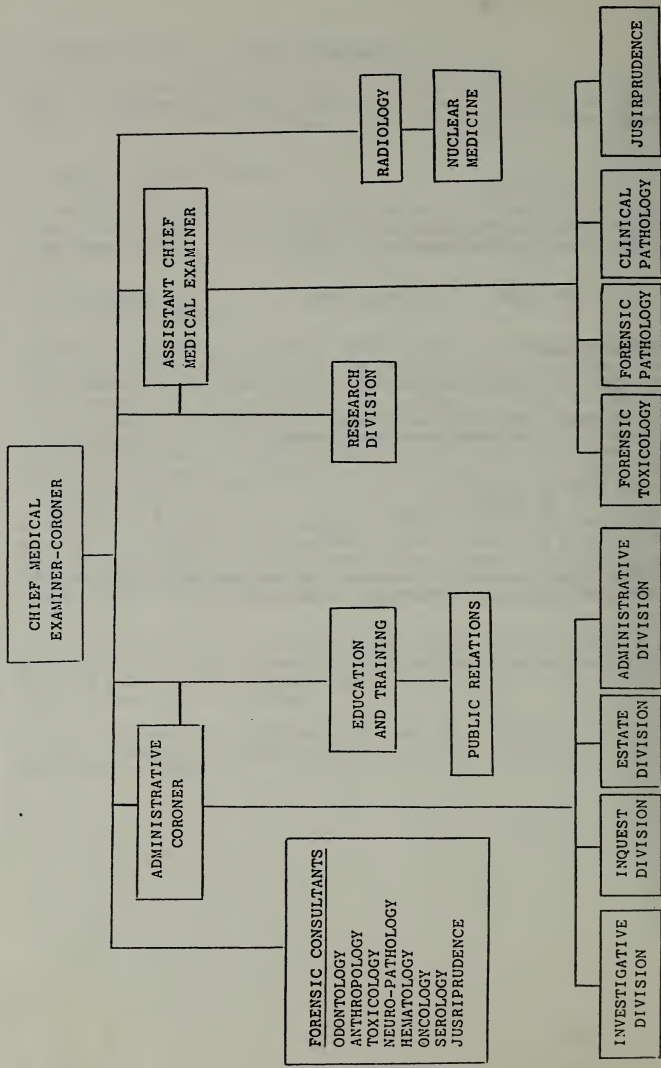
Forensic medicine serves many useful purposes in a community. It is our goal to have a worthwhile and widely beneficial program in this county for both the living and the dead.

DEPARTMENTAL COSTS

1986 - 1987

Total Budget	\$1,910,907.00
Transfers to controller, Healt and Retirement	\$ 330,880.00
NET BUDGET (all other costs)	1,580,027.00
Total Cases	4,077
Cost per case investigated	\$ 388.00
Revenues (sales of records, public auctions, fee-for-service work	\$ 41,677.00
Total Costs <u>Ad Valorum</u> Taxes per case Investigated	\$ 377.00

As indicated elsewhere, this includes all investigative, administrative, scientific and expert witness costs to the county.



City & County of San Francisco
 Chief Medical Examiner/Coroner's
 Office and Organization Chart
 Date: June 1985

CHIEF MEDICAL EXAMINER/CORONER'S OFFICE

- Directs operation of the department
 - Investigates and medically evaluates all deaths where causes are undetermined
 - Establishes procedures and work standards
 - Directs and evaluates effectiveness of professionals
 - Presides at inquests and examines witnesses
 - Testifies in court as expert witness
- (1) CHIEF MEDICAL EXAMINER/CORONER (2584)

STENOGRAPHIC SECRETARY

- Performs highly specialized stenographic/secretarial duties
 - Serves as confidential secretary
- (1) Stenographic secretary (1432)

ADMINISTRATIVE & INVESTIGATIVE DIVISION

- Assists in directing the administrative and legal activities and functions
 - Acts for Medical Examiner in his absence
 - Develops and enforces departmental policies
- (1) Administrative Coroner (2581)

ESTATE SECTION

- Receives, accounts for and transfers personal property acquired by investigators
 - Assigns and reviews work of assistants
 - Assists with preparation of budget
 - Initiates all purchases and payment for operation of office
 - Handles confidential files & mail
- (1) MANAGEMENT ASSISTANT (1842)

INVESTIGATIVE SECTION

- Investigates circumstances transfer of jurisdiction of Medical Examiner
 - Takes charge of bodies, evidence and valuables
 - Notifies next of kin or legal representatives
 - Prepares detailed reports
 - Operates ambulance
 - Fingerprints deceased persons
- (1) CORONER'S INVESTIGATORS (2560)

CLERICAL SECTION

- Transcribes medical reports from dictation equipment
 - Operates Word Processing equipment
 - Types case histories, mail, files all correspondence related to cases
 - Operates typewriter relative to deaths in office and telephones
- (4) MEDICAL TRANSCRIBER TYPISTS (1440)
 (1) MEDICAL CLERK STENOGRAPHER (1464)

INQUEST SECTION

- Records testimony at all inquests
 - Arranges for transcription of testimony
 - Records depositions
- (1) COURT REPORTER (P.T.) (8138)

FORENSIC TOXICOLOGY & SEROLOGY SECTION

- Conducts chemical examination of body tissues & fluids, hair, sweat & other forensically significant cases
 - Records & prepares case histories
 - Maintains equipment, ensures quality assurance of methods & procedures, & monitors compliance
 - Operates & maintains laboratory equipment
 - Consults with District Attorney, District Attorney, Police, District Attorney, Physicians & other significant people
 - Provides expert testimony in court
- (1) TOXICOLOGIST (2458)
 (2) ASSISTANT TOXICOLOGISTS (2459)
 (1) LABORATORY TECHNICIAN (2472)
 (1) STAFF ASSISTANT (1740)

CLINICAL & FORENSIC PATHOLOGY SECTION

- Performs autopsies
 - Dictates medical findings and prepares related case records and reports
 - Confers with courts, police and district attorneys
 - Performs routine clinical laboratory tests relating to pathogenic microbes or other specimens
 - Performs specialized identification work
 - Examines decomposed bodies
 - Maintains morgue and autopsy rooms
 - Conducts Forensic Medical Seminars and lectures
- (2) SENIOR PHYSICIAN SPECIALISTS (2232)
 (2) POST M.D. VISITORS (2249)
 (2) CLINICAL LABORATORY TECH. (2251)
 (3) FORENSIC AUTOPSY TECH. (2523)

FISCAL YEAR 1986-87

Total Deaths in County	8,325
Total Deaths Reported to Coroner	4,077
Cases Reported, Investigated and Cleared by the Coroner or physician's signature	2,426
Coroner's Cases	1,651

% Reported to Coroner	49.0
% County Deaths Having Coroner's Jurisdiction	20.0

Cases Accepted by Coroner

1. Natural Deaths	1,027	(62.2%)
2. Accidents	268	(16.2%)
3. Suicides	171	(10.4%)
4. Homicides	110	(6.6%)
5. Mode Equivocal	55	(3.3%)
6. Cause Unknown	7	(0.4%)
7. Sudden Infant Death Syndrome	13	(0.8%)
8. Private Autopsies	20*	

*Not included in above figures.

Autopsies performed	1,307
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Autopsy Index	79%
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Burials Authorized by Coroner

1. Indigents and fetuses buried by City	153
2. Cases buried by funeral home with Public Administrator-controlled funds	33

Inquests Held or Depositions Taken	26
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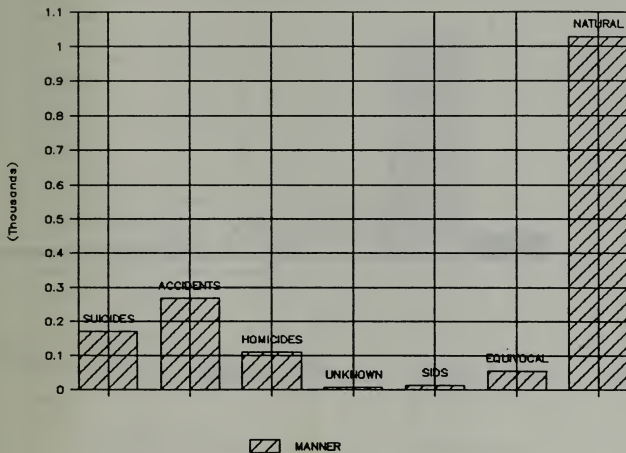
Identification

1. Persons brought to Coroner's Office with insufficient identification	195
2. Persons subsequently identified by fingerprints, dental X-rays or other means	188
3. Persons buried as unidentified	7
4. Fingerprints taken and forwarded to FBI, CII, or SFPD	1,539

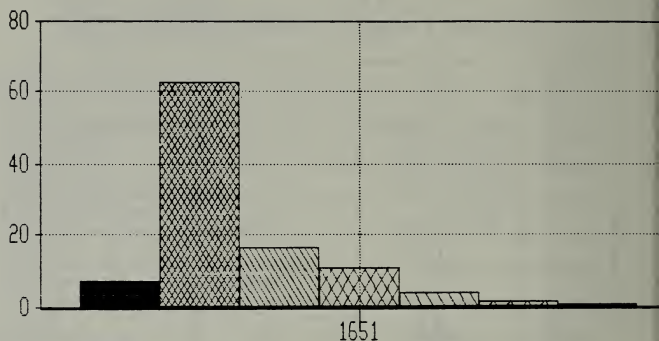
MEDICAL EXAMINER CASES FOR 1986 TO 1987

SUICIDES	171
ACCIDENTS	268
HOMICIDES	110
UNKNOWN	7
SIDS	13
EQUIVOCAL	55
NATURAL	1027

MEDICAL EXAMINER CASES 1986 TO 1987







MEDICAL EXAMINER CASES 1986 TO 1987






TOTAL

1651

 % HOMICIDE
 % EQUIVOCAL

 % NATURAL
 % SIDS

 % ACCIDENT
 % UNKNOWN

 % SUICIDE

MEDICAL EXAMINER CASES

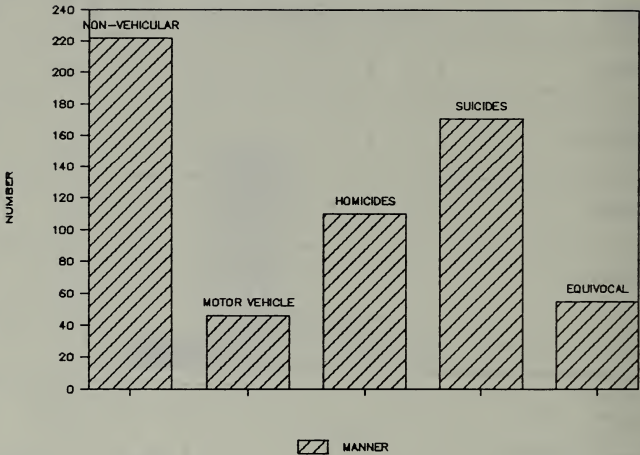
1966-1967

Monthly Comparison

MANNER OF DEATH	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
Natural	76	88	89	85	83	106	92	89	61	70	90	18	1027
Unknown	0	1	0	1	0	1	0	1	1	1	0	1	7
Equivocal	0	5	3	2	5	5	2	6	7	7	8	6	55
Suicide	14	10	17	14	10	10	16	21	13	13	13	18	171
Homicide	11	8	12	8	5	14	8	11	8	5	11	9	110
Industrial Accident	1	0	0	0	0	0	0	0	1	0	0	0	2
Accident - Other	19	23	15	21	14	24	15	13	25	12	15	24	220
Motor Vehicle Acc.	4	2	4	4	2	7	7	2	3	4	3	4	46
*SIDS	2	3	0	1	1	4	1	0	0	0	1	0	13
PRIVATE AUTOPSIES (Not in above total.)	2	1	5	1	2	2	2	0	4	0	0	1	34
TOTALS	127	140	140	136	120	171	140	145	138	113	141	140	1651

*SIDS - Sudden Infant Death Syndrome

VIOLENT DEATHS



Violent deaths are those caused by any non-natural means, including drugs. In San Francisco, 602 violent deaths occurred during the fiscal year 1986-87, accounting for 36% of the Medical Examiner death investigations.

VIOLENT DEATHS

Of the 1,651 deaths investigated by the Coroner's Office during 1986-87, 602 were determined to be the result of violence.

<u>Mode</u>	<u>Total No.</u>	<u>% of Coroner's Cases</u>	<u>% of County Deaths</u>
ACCIDENT	268	16.2	3.0
Motor vehicle	46	3.0	
Non-vehicular	220	13.0	
Industrial	2	0.0	
SUICIDE	171	10.4	2.0
HOMICIDE	110	6.5	1.2
EQUIVOCAL	55	3.3	0.6

VIOLENT DEATHS

Racial Distribution

<u>RACE</u>	<u>Accident</u>	<u>Suicide</u>	<u>Homicide</u>	<u>Mode Equivocal</u>	<u>TOTAL</u>
Caucasian	184	140	61	36	421
Black	53	12	39	14	118
Asian	27	17	9	5	58
Other	4	2	1	0	7
TOTALS	268	171	110	55	604

Distribution by Sex

Male	189	129	88	43	449
Female	79	42	22	12	155
TOTALS	268	171	110	55	604

VIOLENT DEATHS

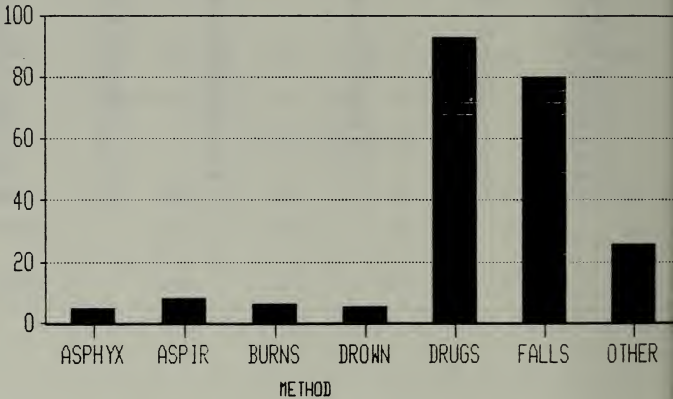
MODE OF DEATH - YEARLY COMPARISON

<u>YEAR</u>	<u>MOTOR VEHICULAR</u>	<u>Non-Vehicular</u>	<u>SUICIDES</u>	<u>HOMICIDES</u>	<u>TOTALS</u>
73-74	82	256	220	137	695
74-75	89	349	224	126	788
75-76	105	363	195	151	814
76-77	75	226	233	149	683
77-78	81	271	194	145	691
78-79	94	246	233	103	676
79-80	94	199	208	114	615
80-81	106	191	179	136	612
81-82	74	240	183	132	629
82-83	74	245	173	104	596
83-84	51	230	182	84	547
84-85	60	214	153	95	522
85-86	61	231	161	120	573
86-87	46	222	171	108	547

NON-VEHICULAR ACCIDENTS

This category includes all unintentional fatalities except for traffic deaths. There were 220 accidental deaths which accounted for 13% of the Medical Examiner death investigations for the fiscal year of 1986-87.

NON-VEHICULAR ACCIDENTS 1986-1987



■ NUMBER

<u>NUMBER</u>	<u>% TOTAL</u>	<u>METHOD</u>	<u>% ALCOHOL</u>
92	42	DRUGS	37
80	36	FALLS	18
4	2	ASPHYXIA	25
5	2	DROWNING	60
6	3	BURNS	50
8	4	ASPIRATION	3
25	9	OTHER	0

INDUSTRIAL ACCIDENTS

1986-1987

Total Number of Industrial Accidents 2

MEANS

Traumatic Injury 2

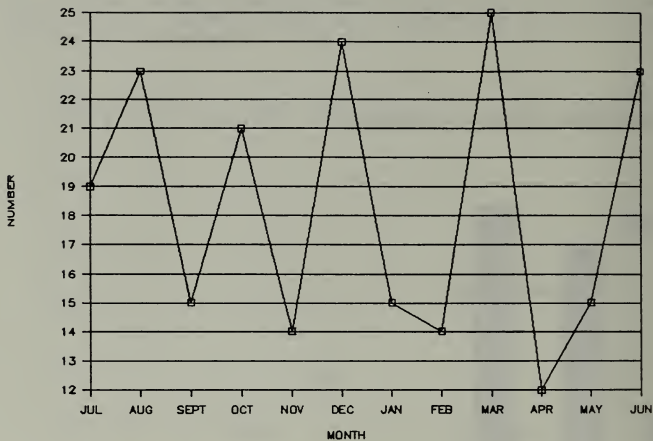
SEX

Male 2

Female 0

ACCIDENTS

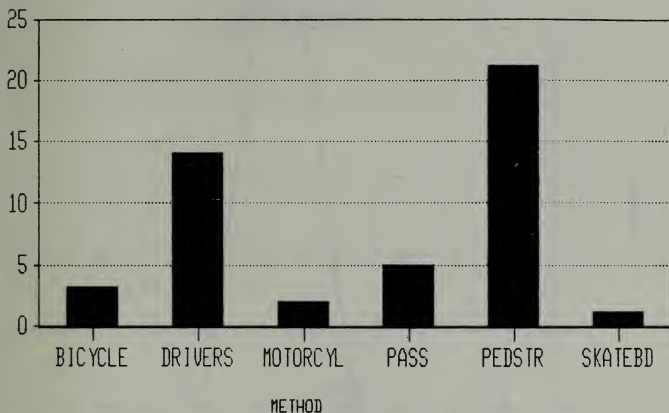
ACCIDENTS BY MONTH



TRAFFIC

In San Francisco, there were 46 traffic-related fatalities, accounting for 3% of the Medical Examiner death investigations for the fiscal year 1986-87.

TRAFFIC FATALITIES 1986 TO 1987

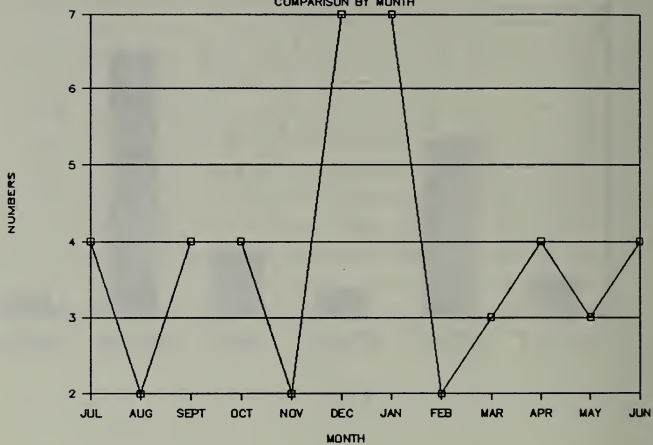


ER

METHOD	NUMBER	% TOTAL	# ALCOHOL	% ALCOHOL
MOTORCYCLE	2	4.3	0	0
SKATEBOARD	1	2.1	0	0
BICYCLE	3	6.5	0	0
PEDESTRIAN	21	45.6	5	23.8
DRIVERS	14	30.4	6	42.8
PASSENGER	5	10.8	2	40.0

TRAFFIC DEATHS

COMPARISON BY MONTH



TRAFFIC (VEHICULAR) DEATHS

Comparison by Age

<u>Age Group</u>	<u>Number</u>
0 - 19	5
20 - 29	7
30 - 39	8
40 - 49	2
50 - 59	8
60 - 69	8
70 - 99	8

Male	33	White	26
Female	13	Black	10
		Asian	10

ACCIDENTAL DEATHS

	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>
TOTAL MONTH	19	23	15	21	14	24	15	14	25	12	15	23

Male	12	19	10	14	8	14	10	11	20	9	11	16
Female	7	4	5	7	6	10	5	3	5	3	4	7

MANNER OF DEATH

Drugs	8	11	5	7	3	8	2	6	11	4	11	16
Aspiration/ food bolus	0	0	2	3	0	0	0	1	1	0	0	1
Drowning	0	0	0	2	2	1	0	0	0	0	0	0
Asphyxia	0	0	0	0	1	0	1	1	1	0	0	0
Firearms	0	0	0	1	0	0	0	0	0	0	0	0
Gas/Smoke/CO Inhalation	0	0	0	0	3	0	2	2	0	2	0	0
Burns	0	0	2	0	0	1	0	1	0	0	2	0
Falls	8	10	5	6	5	11	6	3	12	6	2	4
Med Mis Adv.	3	2	1	0	0	3	2	0	0	0	0	1
Other	0	0	0	0	0	0	2	0	0	0	0	1

MOTOR VEHICLE DEATHS

4	2	4	4	2	7	7	2	3	4	3	4
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RACIAL COMPARISONS

Caucasian	16	14	11	16	8	17	10	9	22	26	12	15
Black	2	6	3	5	3	3	5	3	2	4	1	6
Asian	1	3	0	0	2	4	0	1	1	2	2	1
Other	0	0	1	0	1	0	0	1	0	0	0	1

SUICIDE

The determination of suicide as a manner of death represents the summation of scene investigation, including a review of psychological state, autopsy, pathology, toxicology and, frequently, other investigation. To the best of our knowledge, this is the only Coroner's Office performing toxicology on multiple organs and/or body fluids routinely in order to evaluate the metabolic status of a drug or drugs.

Realizing the immense emotional impact on family, the diagnosis of suicide is never made lightly, and always represents a decision made on the basis of data sufficient to defend that decision in a court of law, if necessary. Should these data be inconclusive, the victim automatically gets the benefit of the doubt.

Suicide takes a tremendous toll of our young people. The relative number jumping from the Golden Gate bridge would not seem to warrant the publicity assigned them as compared to the evident need for help for individuals using other methods.

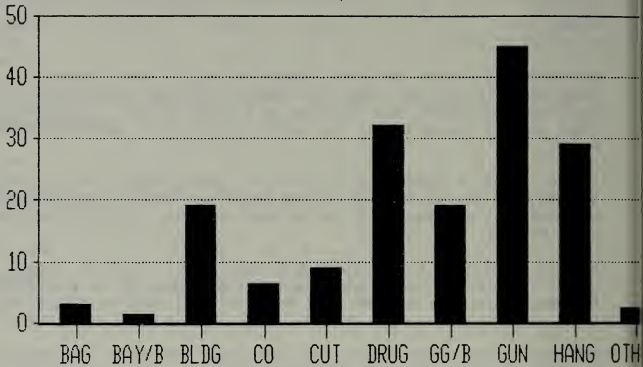
To help understand the problem, and, hopefully, to aid in reduction of suicides, this office has supported suicidology research and prevention programs for many years. It is hoped that this work will help to reduce this needless loss.

The majority of these deaths are situational reactions, and, given momentary trained support, are potentially preventable.

SUICIDES

Suicides are self-inflicted deaths. In San Francisco, 171 suicides occurred, accounting for 10% of the Medical Examiner death investigations for the first year of 1986-87.

SUICIDE BY METHOD 1986 TO 1987



METHOD

■ NUMBER

METHOD	NUMBER	% TOTAL	# ALCOHOL	% ALCOHOL
DRUG	32	18.7	11	34.0
GG/B	19	11.1	3	15.8
BLDG	19	11.1	3	15.8
CO	6	3.5	4	66.6
HANG	29	16.9	11	37.9
GUN	45	26.3	16	35.5
BAG	3	1.75	0	0
BAY/B	1	0.58	0	0
CUT	9	5.2	2	22.2
OTHER	2	1.1	0	0

SUICIDES

TOTAL NUMBER 1986-87 171

<u>METHOD</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>	<u>1986-87</u>
Poisoning	46	38	34	36	32
Jump/G.G. Bridge	22	19	18	17	19
Jump/Bay Bridge	1	2	0	0	1
Jump/Building	16	23	15	16	19
Auto/CO	7	4	8	6	6
Plastic bag	2	1	1	2	3
Hanging	26	28	29	28	29
Cutting/stabbing	7	10	4	5	9
Firearms	36	48	34	46	45
Drowning	9	1	0	3	6
Burning	6	2	0	1	0
Other	1	2	10	1	2

SEX

Male	123	138	112	107	129
Female	50	44	41	54	42

RACE

Caucasian	145	143	127	141	140
Black	12	22	11	7	12
Asian	16	17	15	13	17
Other					2

SUICIDES

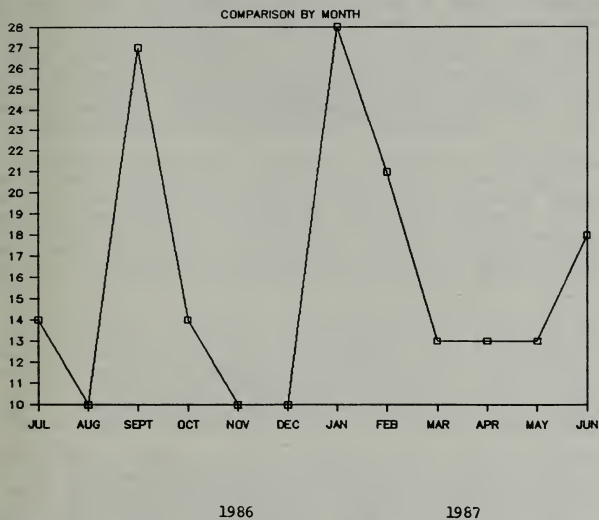
Comparison by Age

Number per Year

<u>Age Range</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>	<u>1986-87</u>
0 - 19	7	9	4	7	7	2
20 - 29	56	37	34	27	29	22
30 - 39	48	48	44	37	46	45
40 - 49	26	20	21	25	18	28
50 - 59	13	20	26	20	18	30
60 - 69	17	17	20	21	19	20
70 - 79	12	18	18	15	12	12
80 - 89	3	9	12	4	10	9
90 - 99	1	2	3	2	2	3

SUICIDES

Comparison by Month

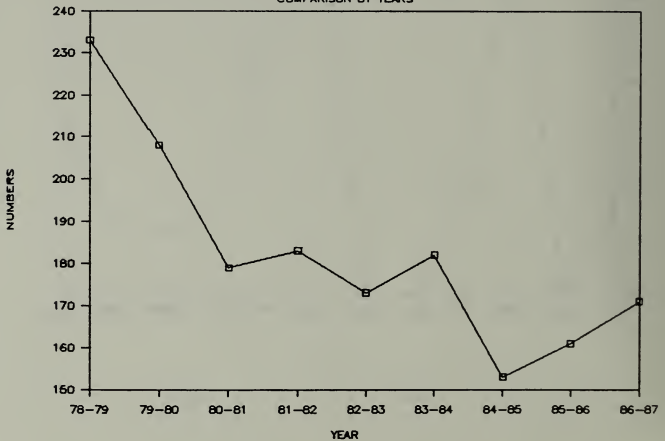


SUICIDES

COMPARISON BY YEARS

METHOD	78-79	79-80	80-81	81-82	82-83	83-84	84-85	85-86	86-87
Poisoning	83	52	55	50	46	38	34	36	32
Firearm	40	40	31	36	36	48	34	46	45
Golden Gate Bridge	19	21	21	18	22	19	18	17	19
Total Suicides by Year	233	208	179	183	173	182	153	161	171

SUICIDES
COMPARISON BY YEARS



HOMICIDE

Homicide is the killing of one human by another. Murder is the unlawful killing of a human being with malice. The following data do not differentiate homicide as to whether it is justifiable, accidental or murder. Such distinctions are the proper function of the judicial system and are not the responsibility or function of this office.

Any judicial system dealing with crimes involving death requires a well-trained staff and well-equipped Medical Examiner-Coroner's Office that can and will interpret the forensic findings in an unbiased, fair manner. This investigation must be intense, accurate and rapid enough so that the charges against one or more individuals may be pursued or dismissed without unfairly affecting their constitutional rights. This is the purpose of this office.

The proper evaluation and investigation of a homicide begins, naturally, at the scene. In the majority of cases, a member of this office (either the Coroner's investigator, Administrative Coroner, or Medical Examiner), determines whether a death is a potential homicide. It has been well-documented that, if such a determination is made by an individual inexperienced or untrained in death investigation, his opinion will be wrong in 50% of the cases. Such a person is very apt to miss the subtle homicide and is more inclined to miscall a natural or accidental death as homicide, resulting in false arrest, false accusations, needless expenditure of public funds, waste of investigative time and delay in the investigation of other deaths.

The Coroner's Investigator responds to the scene of death and determines whether the Police Homicide Detail will be called. When homicide is obvious, the Coroner's Investigator responds as part of a team (other members include homicide investigators, photographers and criminologists). This office is responsible for the body, identification, inquiry into circumstances, manner and means of death (Gov. Code 27491.2). Beside the scene investigation, the Coroner's Investigator is responsible for recovering property, locating and notifying next of kin, and preparing a written summary of his investigation.

In about one-third to one-half of the homicides, a forensic pathologist responds to the scene, aiding in the investigation. The subsequent autopsy, including photography, may also use fluoroscopy, X-ray, angiography and other techniques to establish and define the number, nature and severity of wounds, to obtain evidence (i.e. bullets) and to prepare an official report. This report, including chemistry, serology and toxicology results, is used as part of the prosecution or defense of the case in the formal judicial hearing.

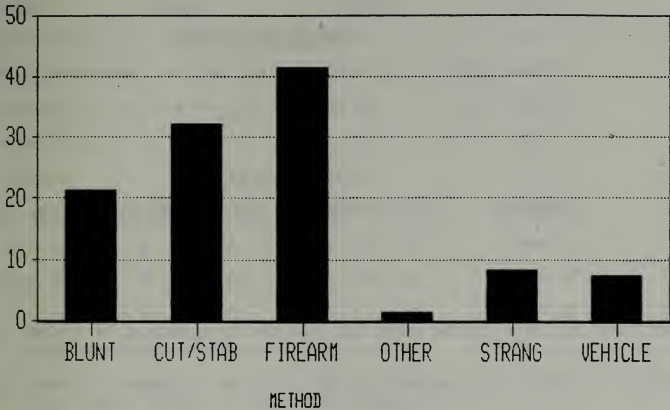
Pertaining to criminal trial, our judicial system requires identification of an individual and presentation of evidence, usually by virtue of expert testimony, relative to the cause of death or trauma associated with death. The Medical Examiner-Coroner's Office identifies the body, frequently relying on local police, CII, or FBI fingerprints. Expert forensic testimony is given by the Forensic Pathologist from this office. In addition, the Forensic Toxicologist is frequently called upon to testify on the significance and effect of

various drug levels, a matter of great importance when dealing with the concept of diminished capacity.

Of minor, but increasing importance, is the fact that, because of our excellent and advanced medical facilities, we are seeing more homicide and traffic cases transferred into the County for medical therapy. Should these individuals die, the autopsy and court testimony are done by this office.

HOMICIDES

Homicides are those deaths caused by another person, generally resulting in murder and manslaughter charges. In San Francisco, 110 homicides occurred in 1986-87, accounting for 7% of the total Medical Examiner investigations.



<u>METHOD</u>	<u>NUMBER</u>	<u>% TOTAL</u>	<u># ALCOHOL</u>	<u>% ALCOHOL</u>
CUT/STAB	32	29	19	59
STRANG	8	7	5	62
BLUNT	21	19	7	33
VEHICLE	7	6		29
FIREARM	41	37	14	34
OTHER	1	1	0	0

HOMICIDES

Total Number of Homicides 110

Males 88 Females 22

COMPARISON BY MONTH

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL
11	8	12	8	5	14	6	13	8	5	11	9	110

COMPARISON BY AGE

<u>Age range</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>	<u>1986-87</u>
0 - 19	16	7	8	8	9	8
20 - 29	33	26	21	30	40	28
30 - 39	36	30	27	22	27	27
40 - 49	18	16	16	10	18	18
50 - 59	16	16	4	10	7	11
60 - 69	6	6	6	5	4	8
70 and above	7	2	3	10	15	10

COMPARISON BY RACE

Caucasian 61

Black 39

Asian 9

Other 1

HOMICIDE

COMPARISON BY METHOD

<u>Method</u>	<u>Number</u>	<u>Alcohol*</u>	<u>Drugs**</u>
Blunt trauma	21	33%	14%
Cutting/stabbing	32	59%	22%
Firearms	41	34%	29%
Strangulation	8	62%	38%
Vehicular	7	29%	0%
Drowning	0	0%	0%
Fire	0	0%	0%
Other	0	0%	0%

* Refers to percentage of victims (of those tested) with positive blood ethyl alcohol concentrations

** Refers to percentage of victims (of those tested) with positive blood drug abuse levels (heroin, cocaine, and/or amphetamines)

PATHOLOGY

In the Pathology department, the tissue and body fluid samples taken at autopsies are prepared for microscopic study, histochemically stained, or analyzed for chemical constituents. Cardiac pacemakers or other mechanical lifesupport devices are examined for any defect. Smears or "wet-mounts" are examined for spermatozoa, bacteria, or tuberculosis. Bacteriologic cultures may be taken, but, if pathogens are grown, they are usually sent to the Department of Public Health (state or local) for further identification. If indicated, "soft" X-ray or histochemical tests are done to establish entrance or exit gunshot wounds. Here, also, research techniques such as methods of obtaining fingerprints from the skin of a victim, are developed.

MONTHLY FIGURES

1986-1987

PATHOLOGY*

TOTAL CORONER'S CASES	CASES REFERRED TO PATHOLOGIST	NO. OF ORGANS SUBMITTED	NO. OF SECTIONS TAKEN	HISTO- PATHOLOGIC SLIDES MADE	SPECIAL STAINS **	BLOOD GROUPINGS ***	OTHER DETERMINA- TIONS ****
127	89	757	2067	606	63	15	531
140	102	809	2682	758	95	17	384
140	91	739	2009	638	78	14	541
136	104	840	2272	505	51	16	170
120	71	632	1708	505	159	16	260
113	113	1047	2623	909	12	27	215

140	78	714	1636	518	43	18	464
145	87	805	1662	577	52	21	185
138	89	809	2036	752	87	11	224
113	71	603	1695	570	82	14	255
141	73	646	1637	587	93	9	258
140	72	587	1312	478	80	22	218

ALS	1651	1040	8988	23339	7605	895	200	3645
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* These figures do not reflect photography, forensic radiology, or material prepared for teaching forensic pathology

** Includes smears examined for bacteria and spermatazoa

*** ABO and Anti-Rh

**** Blood, urine, water, evidence for: hematology, biochemistry, urinalysis, bacteriology, serology, "Sickledix," etc.

TOXICOLOGY

Toxicology is the study of the interaction of foreign compounds, such as with living organisms (e.g. people). It involves knowing something of nature of that interaction, how the foreign compounds break down (that is they are metabolised), and what effects there have on the health and behavior of the individual.

All of this information is vital to the role that toxicology plays in the determination of the cause of death, as well as evaluating the present significance of chemicals found in the living.

Also generated within the Toxicology Department is information on samples of suspects in criminal cases (e.g.. homicides, driving under the influence, probation failure, (H and S 11550), assaults) and other persons to be tested at the request of various law enforcement agencies. The data obtained in these cases enable the toxicologist to assist in interpreting the behavior of suspects involved, to advise the District Attorney, the Public Defender, the City Attorney, police Department, the California Highway Patrol, and other agencies, and to give expert testimony in court as necessary in such cases as to the effect of drugs in the case. This application of toxicological facts to legal problems is Forensic Toxicology.

The Toxicology Department also performs analyses on samples submitted by the Police and Fire Departments in connection with the recruitment program and other personnel requirements. The results in some cases are presented to the respective commission in official hearings.

Toxicological facts are determined through tests performed on biological samples (e.g. Blood, urine, gastric contents, liver, etc) taken at the time of autopsy or from living persons. The samples are subjected to a series of chemical manipulations designed to extract any drugs or other physiologically active compounds that may be present. The subsequent extracts are then examined with equipment set up to detect, accurately identify, and quantitatively measure that may be present. These determinations must be of unquestionable accuracy and as specific as scientifically possible; and they must be able to stand up to review by any other qualified laboratory in the nation.

The analytical methods most commonly used in the toxicological studies are thin layer chromatography; ultraviolet, visible, and fluorescence spectrophotometry, and immunoassay techniques. Advanced techniques, such as gas chromatography and HPLC (High Performance Liquid Chromatography) are used for confirmation of difficult samples. These precise and sophisticated methods require the use of advanced laboratory apparatus and highly trained personnel.

As a routine part of the work, the levels of drugs in two or more body compartments (one of which is invariably blood) are determined in order to

Toxicology, Continued

answer the question of acute or chronic drug use. This approach is of the utmost importance in determining the time of ingestion and also the intent of the ingestion; that is whether it was accidental or suicidal.

The range of drugs available to the public is extremely wide, and the nature and type of compounds involved are highly variable. The methodologies necessary to conduct toxicological analyses have to be similarly wide ranging and also continually expanded in order to keep up with the manufacture of new compounds, both legal and illegal. This is an important aspect of the Toxicology Department's work often requiring extensive research. Now, with many drugs being compounded to have physiologic effect at very low doses, detection in body fluids is even more difficult.

The most common drugs in the community are alcohol and prescription items. However, illegal, or "street", drugs (especially morphine-type alkaloids [e.g. heroin], cocaine, and amphetamines) represents a very significant percentage of the compounds actually found in the cases presented to the Toxicology Department. Less commonly used drugs, industrial materials, certain gases, and various other foreign compounds have also been detected.

In reviewing the data presented in the ensuing pages, it will be seen that the number of tests per case performed on all cases received by the Toxicology Department for the year July 1985 - June 1986 the number was 4.73. For the year July 1986 - June 1987 it was 5.37. This represents an increase of 13.5% in the work-load per case in this item alone. The work increase in other sections is reflected in the data. Forensic toxicology continues to be one of the fastest growing sections in the medical examiner's office reflecting the increasing need in the community.

TOXICOLOGY
MEDICAL EXAMINER - CORONER'S CASES
 July 1986 - June 1987

Incidence of drugs and other physiologically active material detected

The compounds listed are not necessarily the cause of death nor even a contributing factor. They are the toxic agents that were found to be present, singly or in combination, in Medical Examiner-Coroner's cases.

ABUSE DRUGS

Morphine-type alkaloids	90
Cocaine	81
Benzoylcegonine	87*
Codeine	59
Methamphetamine	47
Amphetamine	31
Phencyclidine (PCP)	2

ANTI-DEPRESSANTS

Amitriptyline (Elavil)	8
Nortriptyline (Aventyl)	3
Imipramine (Tofranil)	3
Desipramine (Norpramin)	2
Doxepine (Sinegran)	2
Mondesmethyldoxepin	1
Trimipramine (Surmontil)	1

*Benzoylcegonine is not a drug of abuse. It is a metabolite of cocaine and is always present when cocaine is detected. In some cases, benzoylcegonine, not cocaine, was found which indicated that there had been some exposure to cocaine.

ANALGESICS - NARCOTIC

Methadone	17
Methadone Metabolite	8
Propoxyphene (Darvon)	5
Norpropoxyphene	5
Meperidine	2
Hydromorphone (Dilaudid)	2

SEDATIVE -HYPNOTICS

Phenobarbital	8
Secobarbital	5
Pentobarbital	1
Amobarbital	1

ANALGESICS - NON-NARCOTIC

Salicylates	15
Acetaminophen	3
Phenazopyridine (Pyridium)	1

ANTI-ANXIETY AGENTS

Diazepam (Valium)	2
Nordiazepam	1
Triazolam (Halcion)	1
Chlordiazepoxide (Librium)	1
Flurozepam (Dalmane)	1
Desalkylflurozepam	1

CARDIAC DRUGS

Lidocaine	35
Metoprolol (Iopressor)	1
Diltiazem (Cardizem)	1
Digoxin	1

Clonazepam (Klonopin)	1
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TRANQUILIZER

Chlorpromazine (Thoridazine)	1
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Drugs Detected, Continued

ANTIHISTAMINES

Diphenhydramine	3
Monodesmethyldiphenhydramine	2
Promethazine (Phenergan)	2
Chlorpheniramine	1

BRONCHODILATORS

Thophylline	10
Ephedrine	6

ANTICONVULSANTS

Diphenlhydantonin (Dilantin)	15
Valproic Acid	1

ANTIITUSSIVES

Dextromethorphan	1
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METALS

Iron	1
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MISCELLANEOUS

Carbon Monoxide	18
Cyanide	3
Acetone	3
Nicotine	1
Sodium Hydroxide (Lye)	1

ANTIMALARIALS

Pyrimethamine (Daraprim)	1
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TOXICOLOGY
MEDICAL EXAMINER - CORONER'S CASES
July 1986 - June 1987

<u>Year/ Month</u>	<u>No. of Cases Referred to Toxicology</u>	<u>No. of Specimens Received</u>	<u>No. of Tests Performed</u>	<u>Alcohol Tested</u>	<u>Pos.</u>	<u>% Pos.</u>
<u>1986</u>						
JUL	126	696	698	122	28	23
AUG	132	771	724	127	27	21.3
SEP	144	812	736	136	35	27.5
OCT	145	727	610	138	33	23.9
NOV	114	623	636	102	29	26.4
DEC	172	1132	888	147	34	23.1
<u>1987</u>						
JAN	145	766	580	94	20	21.3
FEB	144	809	753	115	20	17.4
MAR	135	748	733	117	29	24.8
APR	110	639	745	84	24	28.6
MAY	135	747	686	80	24	30.0
JUN	133	891	940	104	28	26.9
<hr/>						
TOTAL	1636	9362	8738	1366	331	24.2

TOXICOLOGY
FORENSIC TOXICOLOGY CASES
JULY 1986 - JUNE 1987

YEAR/MONTH	No. Cases Referred to Toxicology	No of Specimens Received	No. Of Tests Performed
<u>1986</u>			
JUL	10	16	38
AUG	9	16	66
SEP	31	64	168
OCT	46	89	256
NOV	19	37	106
DEC	31	60	173
<u>1987</u>			
JAN	12	25	83
FEB	19	42	104
MAR	44	92	253
APR	21	44	102
MAY	18	40	100
JUN	35	71	191
<hr/>			
TOTAL	295	596	1640

TOXICOLOGY
FORENSIC TOXICOLOGY CASES
JULY 1986 - JUNE 1987

Incidence of drugs detected in all cases submitted to the Medical Examiner
Coroner's Office Toxicology Laboratory for forensic toxicological examination

The samples in which these compounds were found to be present, either singly or in combination, were generally obtained from either suspects or victims in criminal cases.

Cocaine	120
Benzoyllecognine	122
Morphine-type alkaloids	114
Phencyclidine (PCP)	62
Codeine	39
Methamphetamine	31
Amphetamine	24
Ethyl alcohol	22
Tetrahydrocannabinol	1
Amitriptyline	1
Ephedrine	1
Dexedrine	1

HEROIN DEATHS

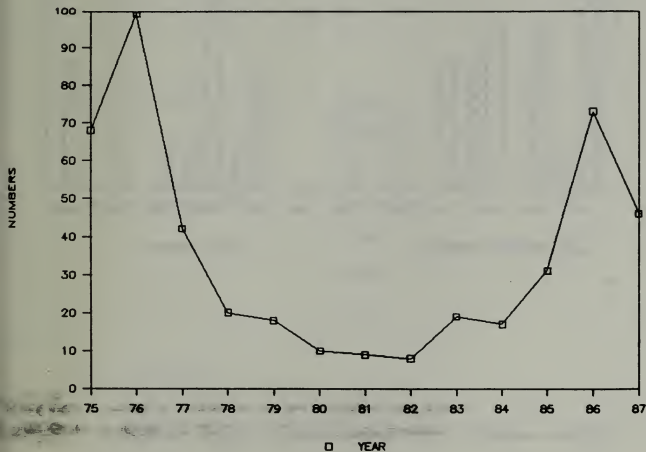
Morphine-type alkaloid (Heroin) deaths 46

Sex Distribution	Male	33	72%
	Female	8	18%

Racial Distribution	Caucasian	33	72%
	Black	11	24%
	Asian	2	4%
	Other	0	0%

Age Distribution

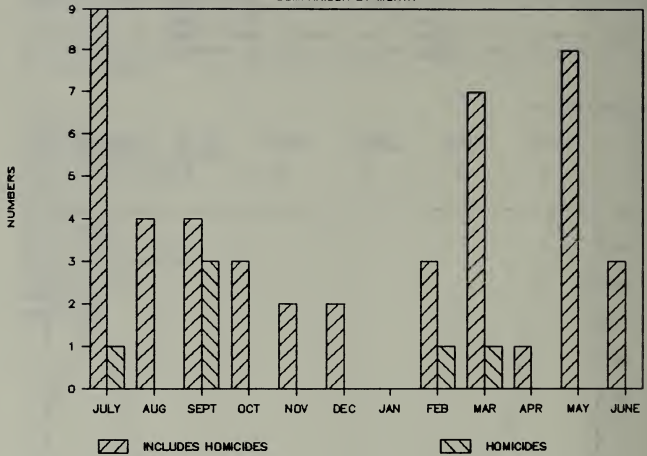
<u>16-20</u>	<u>21-25</u>	<u>26-30</u>	<u>31-35</u>	<u>36-40</u>	<u>41-over</u>
0	6	9	11	9	11



The data presented on the graph indicates an decrease in the heroin-related deaths in San Francisco for the past tfiscal year. Data includes homicide victims tested positive for MTA'S

HEROIN DEATHS

COMPARISON BY MONTH



FISCAL YEAR 1986 -1987

COCAINE DEATHS

1. Cocaine Deaths:		16
2. Cocaine in combination with other drugs:*		22
3. Deaths where Cocaine present as incidental findings:		34
2.* Cocaine and M.T.A.	11	Alcohol Present 3
Cocaine and Amphetamines	6	2
Cocaine, M.T.A., & Amphet.	0	0
Cocaine and Methadone	2	0
Cocaine, Amphet, & Meth.	1	0

(M.T.A. - Morphine Type Alkaloids)

SEX DISTRIBUTION: Male: 57
 Female: 15

RACIAL DISTRIBUTION: Caucasian: 39
 Black: 29
 Asian: 3
 Other: 1

AGE DISTRIBUTION:

<u>16-20</u>	<u>21-25</u>	<u>26-30</u>	<u>31-35</u>	<u>36-40</u>	<u>41-Over</u>
5	10	11	16	15	15

GLOSSARY

ALKALOID OF MORPHINE GROUP	Typically referred to as morphine-type alkaloid, this is the chemical substance found in body fluids after the injection of heroin or other drugs derived from opium
TOXICOLOGY NOT VALID OR ELIMINATED	This term indicates that the deceased lived long enough after the injury to have eliminated some or all toxic agents from the body
FORENSIC PATHOLOGY	The specialty field of medicine involving the application of medical and pathology principles in determining the cause and manner of sudden, unexpected, and medically unattended deaths. This includes the type and nature of injury, public health hazards, type or nature of homicide weapon, the relation of injury to death and interpreting other factors for the court. These data are prepared and presented to the judicial system and public health interests in keeping with the best available knowledge
MODE OF DEATH	Indicates the manner of death, such as natural, accident, suicide or homicide, and is to be distinguished from cause of death, which is purely a medical determination
MODE EQUIVOCAL	With the cause of death determined, investigative data do not clearly differentiate between two modes of death, although some evidence supports one more likely
MODE UNDETERMINED	With the cause of death determined, investigative data do not clearly support one of two possible modes and either one is possible without prejudice
MODE UNKNOWN	Circumstances insufficient to indicate between possible modes, as when only bones are found, or when no medical cause of death is determined
PATHOLOGY	That branch of medicine which deals with the essential nature of disease, especially in the structural and functional changes in tissues, organs or systems of the body causing disease. It involves the diagnosis of disease by microscopic or chemical analysis
SEROLOGY	That branch of pathology which deals with the analysis of blood and body fluids. Blood types for identification, exclusion of a suspect or judicial purposes are examples of the use in this office

TOXICOLOGY

The scientific study of poisons, their detection, actions and treatment. The relationship of drug levels to emotional or personality change, behavioral or reasoning ability are frequent decisions based on these data

MEDICAL EXAMINER

A physician specifically trained in forensic pathology who is responsible for investigating and determining the cause and manner of sudden or unexpected death

AUTOPSY

A scientific dissection of the human body to determine the cause and nature of death in order to detect public health hazards, determine the method or type of death in homicides and improve the level of medical care in the community. In some cases, showing that no injury or wrongdoing was present is of great emotional and stabilizing value to the family



